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*MEMORIAE DOCTISSIMI VIRI
BOGDANI BRUKNER
SODALIS RASCIANAE ACADEMIAE DICATUM*

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MEMORIAE
CLARISSIMI VIRI BOGDANI BRUKNER
RERVM GESTARVM PROTOHISTORICARVM
ACVTISSIMI INVESTIGATORIS
CARISSIMI MAGISTRI
PIENTISSIME DICATVM

BOGDAN BRUKNER

(1931-2006)

On a frosty January morning, terrible news saddened the European scientific community, and deeply grieved all friends: Professor Bogdan Brukner's generous heart had stopped beating.

He passed away shortly before his 75th birthday, leaving an empty space that will be impossible to fill. His demise will inevitably affect a number of vast research projects that we started together, the most important of these being the one dedicated to the Prehistory of Banat. Professor Bogdan Brukner's qualities were almost unanimously appreciated by the members of the archaeological profession. What we especially admired in him was the strength of his moral principles, his outstanding professionalism, his vast specialist knowledge, and, last but not least, his solid general knowledge. An exceptional human being, Professor Bogdan Brukner overwhelmed us all with his great generosity which could only arise from a truly noble and distinguished spirit. He was always ready to give good advice, to spur you on, to provide encouragement or support. He gladly shared his rich professional experience with younger colleagues, and, through the friendliness and joviality that he radiated, he made all differences of age and academic or scientific status between himself and his interlocutor disappear.

Professor Bogdan Brukner was born on 13 May 1931 in Zagreb. He attended primary and grammar school in Belgrade where he also studied and graduated from the Faculty of Philosophy, Department of Archeology in 1954. He received his PhD in 1965 with a dissertation entitled *The Neolithic in Vojvodina*. Between 1960 and 1968 he worked as a curator at the Museum of Vojvodina in Novi Sad. After the foundation of the Institute for the study of Vojvodina history in 1968, he was elected a scientific assistant and in the same year he started teaching archaeology as an assistant professor at the Faculty of Philosophy in Novi Sad. In 1972 he was elected a higher scientific assistant at the Institute of History, in 1973 became an associate and in 1984 a full professor at the Faculty of Philosophy in Novi Sad.

A scholarship he received from the Humboldt Foundation enabled him to stay in Germany during 1971 and 1972, working on "Pannonia and Central Europe in the Neolithic". Part of this research was published in Munich in *Die illustrierte Weltgeschichte der Archäologie* (1979).

Between December 1979 and February 1980 he delivered several lectures on problems of the Neolithic and Eneolithic at the Anthropology Department of Berkeley University in the USA and later in New York, in Los Angeles, as well as in Frankfurt a/M, Köln, Munich, Münster, Basel, Zürich, Bern, Groningen, Krakow, Poznań and many others.

As a scientist, he conducted research in the field of prehistoric archeology and especially the early agricultural and cattle breeding communities of the Pannonian and Balkan regions. The greatest part of his research focused on the early and late Neolithic period in the Balkan and Central European regions.

He was a member of a number of archaeological committees in the country and abroad and was an active participant in many projects, congresses, symposiums and round table meetings, some of which he organized himself.

In 1984 he was elected a corresponding and in 1992 a full member of the Vojvodinian Academy of Sciences and Arts which later became the Branch of the Serbian Academy of Sciences and Arts in Novi Sad.

As friends, we shall sorely miss his bracing optimism which gave us all the confidence we needed in order to pursue our research goals.

Opto sit tibi terra levis carissime magister et amice !

Florin Draşovean

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SIZE RANGES OF PREHISTORIC CATTLE AND PIG AT SCHELA CLADOVEI (IRON GATES REGION, ROMANIA)

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Keywords: *Schela Cradovei, Romania, Late Mesolithic and Early Neolithic, zooarchaeology*

Abstract

This paper summarizes osteometric data for cattle and pig from Late Mesolithic and Early Neolithic contexts at Schela Cladovei in an attempt to distinguish between the wild and domestic forms of these animals. The data are compared to empirical size ranges published by Bökönyi for aurochs (*Bos primigenius*) and wild pig (*Sus scrofa*). The results suggest the overwhelming majority of the bones measured fall below the median values of the wild forms. No cattle bones were recovered from secure Mesolithic contexts and the size-range data are congruent with the view that most of the cattle from the site were domestic. There is a clear overlap between the size-ranges of the pig bones from Mesolithic and Neolithic contexts, which does not contradict the idea of interbreeding between wild and domestic populations put forward in previous studies.

Introduction

The Iron Gates section of the Danube valley occupies a special zoogeographical area in east-central Europe between Romania and Serbia. It is at this point that the Danube leaves the Carpathian Basin flowing southeast. Post-processual theories of the adoption of agriculture, based on data from northwestern Europe, have sought to emphasize ideology as the major source of change. Material culture seems to have transformed rather

rapidly. Subsistence, on the other hand, was hypothesized as being more conservative. This line of reasoning has three implications as summarized by Rowley-Conwy (2004):

- 1) Mesolithic foragers intensified subsistence;
- 2) Neolithic people were mobile and subsisted mainly on wild resources;
- 3) Subsistence change across the ideological transition was smooth and continuous.

Traditionally, however, the area under discussion in this paper has been considered a natural corridor, important for the transmission of cultural influences from the eastern Mediterranean northwestward toward the landlocked territory of the Carpathian Basin (Figure 1). In the latter area the intensity of Mesolithic subsistence is difficult to study in the absence of sufficiently detailed archaeobiological data, while Early Neolithic peoples relied more heavily on domesticates than previously thought (Bartosiewicz L., 2005), exploiting wild resources on a seasonal/opportunistic basis (Pike-Tay A., et al. 2004). The spread of food production from the Balkans seems to have been relatively rapid in this area. Therefore, in addition to the distribution of Early Neolithic Starčevo-Criș-Körös ceramics, diffusionist theories have also been predicated on the osteological evidence of newly introduced domestic sheep (*Ovis aries* L. 1758) and goat (*Capra hircus* L. 1758), i.e. sheep and/or goat, *Caprinae* Gray 1821), originating from the Near East as no wild progenitors of these species existed in Europe.

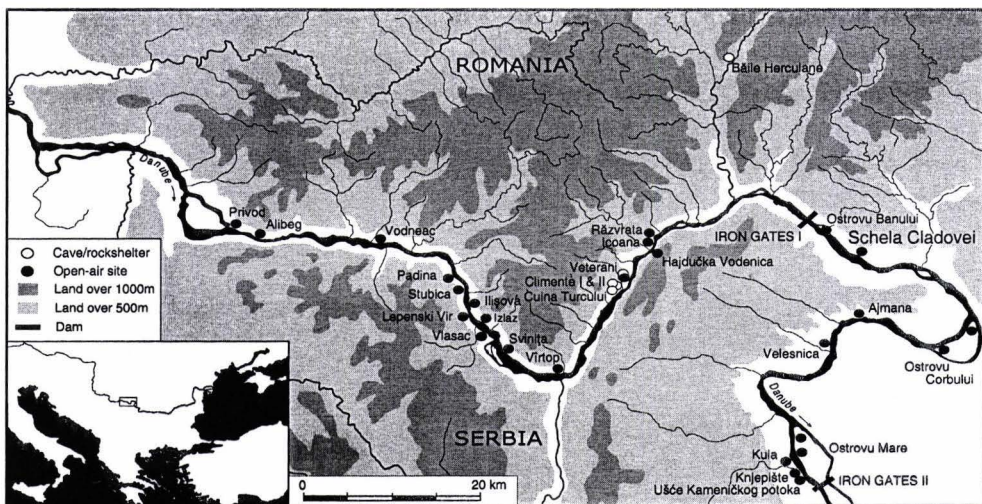


Fig 1: Locations of Schela Cladovei and other Late Stone Age sites in the Iron Gates region

A more formidable problem is represented by the appearances of domestic pig (*Sus domesticus* Erxl. 1777) and cattle (*Bos Taurus* L. 1758) which potentially were products of local domestication, since both wild boar (*Sus scrofa* L. 1758) and aurochs (*Bos primigenius* Bojanus 1827) appear, from osteological evidence, to have been common in the Iron Gates (Bartosiewicz L., et al. 1995). DNA analyses of Neolithic cattle bones from 33 archaeological sites spread over Central Europe, the Balkans, Thrace and the Near East support the Near East as a centre of origin. No signs of autochthonous domestication or subsequent crossbreeding with aurochs could be established (Bollongino R., et al. 2005). On the other hand, possible cross-breeding with local wild boar has blurred the genetic picture in the case of pig as mitochondrial DNA sequences from wild and domestic pig reveal multiple centres of domestication across Eurasia and that European, rather than Near Eastern, wild boar are the principal source of modern European domestic pigs (Larson G., et al. 2005).

It is this duality that makes the morphometric identification of the 'first' domestic cattle and especially pig nearly impossible in the area under discussion here. This paper is a brief review of metric distinctions between wild animals and their domestic forms in the archaeozoological record from Schela Cladovei, a Mesolithic/Early Neolithic site on the left bank of the Danube, located a few kilometres downstream of the Iron Gates gorge.

Material

This study is based on animal remains recovered in excavations at Schela Cladovei between 1992 and 1996. The vast majority of the animal remains belong to two distinct occupation phases which are radiocarbon dated to c. 7100–6300 cal BC (Late Mesolithic) and c. 6000–5600 cal BC (Early Neolithic), respectively. The gap of c. 300 years between the Mesolithic and Neolithic occupations suggests a period when the site was unoccupied (Bonsall C., et al. 2002). The 3918 early prehistoric animal bones identifiable in the settlement material are listed, both taxonomically and chronologically, in Table 1 (a small set of 72 identifiable Iron Age animal bones is beyond the topic of this paper).

Table 1: Faunal remains identified from Late Mesolithic and Early Neolithic contexts at Schela Cladovei.

	Species	Mesolithic		Neolithic	
		N	W(g)	N	W(g)
aurochs	(<i>Bos primigenius</i> Boj. 1827)	12	299	53	3800
red deer	(<i>Cervus elaphus</i> L. 1758)	157	3260	230	3857
red deer antler		77	952	66	883
roe deer	(<i>Capreolus capreolus</i> L. 1758)	33	160	41	167
roe deer antler		2	9		
wild pig	(<i>Sus scrofa</i> L. 1758)	48	821	39	674
brown hare	(<i>Lepus europaeus</i> Pall. 1778)	6	9	14	26
cattle	(<i>Bos taurus</i> L. 1758)	75	1454	400	11297
sheep	(<i>Ovis aries</i> L. 1758)	9	28	35	231
sheep/goat	(<i>Caprinae</i> Gray 1821)	111	193	292	879
pig	(<i>Sus domesticus</i> Erxl. 1777)	67	286	66	410
dog	(<i>Canis familiaris</i> L. 1758)	21	129	29	184
wolf	(<i>Canis lupus</i> L. 1758)	3	24	1	3
red fox	(<i>Vulpes vulpes</i> L. 1758)			1	2
badger	(<i>Meles meles</i> L. 1758)	2	26	1	5
brown bear	(<i>Ursus arctos</i> L. 1758)			1	9
wild cat	(<i>Felis silvestris</i> Schreb. 1777)	2	2		
greek tortoise	(<i>Tortuga graeca</i> Boulanger)	64	161	28	37
frog/toad	(<i>Anura</i> sp.)	2	<1	5	2
sturgeon sp.	(<i>Acipenseridae</i>)	265	1292	102	209
sterlet	(<i>Acipenser ruthenus</i> L. 1758)	50	59	29	15
catfish	(<i>Silurus glanis</i> L. 1758)	46	283	30	66
pike	(<i>Esox lucius</i> L. 1758)	13	9	19	12
pikeperch	(<i>Stizostedion lucioperca</i> L. 1758)	2	1	4	4
undermouth	(<i>Chondrostoma nasus</i> L. 1758)				
barbel	(<i>Barbus barbus</i> L. 1758)				
carp	(<i>Cyprinus carpio</i> L. 1758)	466	563	303	240
bream	(<i>Abramis brama</i> L. 1758)	18	13	14	9
orfe	(<i>Leuciscus idus</i> L. 1758)	2	<1	1	<1
small cyprinid	(<i>Cyprinidae</i>)	329	137	232	73
Total identifiable	(NISP)	1882	10169	2036	23095
large mammal	(<i>Mammalia</i> indet.)	429	1587	752	3102
small mammal	(<i>Mammalia</i> indet.)	491	346	546	540
bird indet.	(<i>Aves</i>)	18	8	13	16
fish indet.	(<i>Pisces</i>)	306	116	346	77

The total weight of the material analyzed so far has been almost 34 kilograms. Owing to the greater contribution of fish and more heavily fragmented mammalian bones in the Mesolithic assemblage, in spite of the comparable numbers of fragments (NISP $\approx$ 2000), these remains weigh only half as much as the Neolithic sample.

There is no clear stratigraphic separation between the Mesolithic and Neolithic occupation phases, owing to subsequent pedogenic alteration of the deposits and reworking by people during the Neolithic and later periods (e.g. by pit digging). Furthermore, soil forming processes have led to blurring of the outlines of archaeological features which may account for the presence of bones of domestic sheep and/or goat in purportedly Mesolithic contexts (Bartosiewicz L., *et al.* 1995, 9). Nevertheless, even the existing provisional chronological subdivision of the material shows a marked diachronic decline in the exploitation of game and aquatic resources. This evidence may be compared to that from stable isotope ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$) analyses of human remains from Lepenski Vir higher up the gorge which suggests a heavy emphasis on aquatic food sources during the Mesolithic but increased exploitation of terrestrial resources during the Early Neolithic (Bonsall C., *et al.* 1997; 2000; 2004).

Of the identifiable domestic animals, cattle and caprinae are represented by the greatest numbers of identifiable bone specimens. As has been mentioned before, the latter are definitely the remains of domestic animals since the wild ancestors of neither sheep nor goat are known in this part of Europe (Bökönyi S., 1974).

The problem of cattle and pig is even more complex. In addition to the potential bias caused by bones in unrecognizable secondary positions, in this case there are difficulties in zoological distinction between remains of the domestic forms and the wild ancestors of these species which also inhabited this area. Encouraging recent results in the distinction between mitochondrial DNA in morphologically similar subfossil bones of sheep and goat (Loreille O., *et al.* 1997), would not be applicable in the case of early domesticates and their wild ancestors since they belong to the same species and are thus genetically continuous.

Stochastically speaking, some domestic cattle and pig bones may have been mis-classified as Mesolithic (to the same degree as with the remains of caprinae). However, it is also possible that some of the 'domestic' cattle or pig bones in the Mesolithic material originate from smaller specimens (esp. females) of the wild ancestor, since there is a

considerable size overlap between the wild and domestic forms of both cattle and pig.

Had the bones been better preserved, this uncertainty could be reduced on the basis of osteomorphological observations. Many of the remains, however, are so fragmented that identification beyond the level of genus was often impossible. The negative effect of fragmentation on the identifiability of animal species is evident (*Bartosiewicz L., 1998, 227*). Potential mis-identifications are more likely to occur in poorly preserved assemblages.

Measurements used in this study are summarized in Table 2. Bovine data comprise measurements from 12 bones deriving from contexts that could not be dated precisely but which are very likely to represent either the Mesolithic or the Neolithic. Furthermore, 12 bones originate from datable Neolithic deposits. Suid bone measurements are more evenly spread chronologically, including only two bones from imprecisely dated strata, four from Neolithic and five from Mesolithic deposits. The measurements are listed in Table 2.

Table 2: Selected Bovine and Suid bone measurements (*von den Driesch 1976*) from Schela Cladovei to be compared to size ranges by *Bökönyi (1995)*.

Bovine, Neolithic									
	Age	Grid	Unit	Context	GL	Bp	Dp	Bd	Dd
M ₃	adult	1 AII		1	38.2				
M ₃	adult	3 AII	1.02-1.12	12	40.9				
radius	adult	1 BIII	0.97-1.02	17				83.6	55.0
metacarpus	adult	1 BII		1				62.0	31.1
metatarsus	adult	1 BII		1				64.1	35.1
tibia	adult			1				67.2	53.0
astragalus	adult	1 BII		1A	91.3			59.7	48.9
astragalus	adult	2 AIII	0.92-0.97	17	57.3			36.1	31.1
astragalus	adult	2 AII		1	62.9			40.2	34.1
astragalus	adult	1 AII	1.27-base	6B	70.6			43.2	38.8
astragalus	adult	2 BII	0.64-0.72	1	71.0				
astragalus	adult	1 BII		1A	83.6			56.2	46.9
metatarsus	subadult	1 BII		1				70.3	37.5
Bovine, Period unknown									
	Age	Grid	Unit	Context	GL	Bp	Dp	Bd	Dd
M ₃	adult	2 AIV	0.53-0.64		39.4				
radius	adult	2 AIII	0.45-0.53			83.9	42.9		

metacarpus	adult	1 BII	0.77-0.82			62.2	42.1		
metacarpus	adult	1 BII	0.45-0.53		215.6	60.7	37.0	62.3	34.6
metacarpus	adult	2 BII	0.45-0.53			70.2	43.5		
metacarpus	adult	1 BIII	0.53-0.64					73.3	36.5
tibia	adult	3 BI	0.45-0.53			91.1	84.6		
astragalus	subadult	2 AI	0.64-0.72		48.1			30.8	26.1
astragalus	adult	2 AI	0.64-0.72		60.6			36.3	32.2
astragalus	adult	1 BII	0.45-0.53		73.1			45.5	41.7
astragalus	adult	2 BII	0.45-0.53		76.5			47.5	43.8
astragalus	adult	2 BII	0.45-0.53		84.0			54.0	45.3
Suid, Mesolithic									
	Age	Grid	Unit	Context	GL	Bp	Dp	Bd	Dd
epistropheus	adult	2 AI	0.77-0.82	15		56.1			
scapula	adult	2 AI	0.77-0.82	15				34.9	46.2
scapula	adult	2 AII	0.77-0.82	15				40.8	60.6
radius	subadult	2 BII	0.77-0.82	15				27.5	20.3
astragalus	subadult	2 BII	0.77-0.82	15	47.5			25.2	26.1
Suid, Neolithic									
	Age	Grid	Unit	Context	GL	Bp	Dp	Bd	Dd
M ₁ -M ₃	adult	1 AII		1	78.5				
M ₃	mature	1 BI		1A	43.8				
tibia	adult	1 AII		1				35.6	29.8
tibia	adult	1 BII		1				37.2	33.1
Suid, Period unknown									
	Age	Grid	Unit	Context	GL	Bp	Dp	Bd	Dd
M ₁ -M ₃	mature	1 AI	0.53-0.64		61.0				
radius	adult	2 BII	0.72-0.77		199.9	34.2	25.5	45.0	32.2

Methods

To date, most distinctions between domestic animals and their wild ancestors have been based on size differences. The onset of domestication is known to usually have brought about a considerable body size decrease that is also manifested in bone measurements. To illustrate this effect of domestication, reconstructions of Late Neolithic cattle and pig according to Uerpmann (1983) are worth citing here (Figure 2). In addition to its evidently smaller size, however, the aforementioned DNA studies indirectly suggest that the general appearance of domestic cattle may have been somewhat less similar to local aurochs, if domestic stock was of Near

Eastern origins. This does not influence the fact, however, that very large bones can be unambiguously recognized as remains of wild individuals, while those from small mature animals are by default assigned to the domestic form in both species.

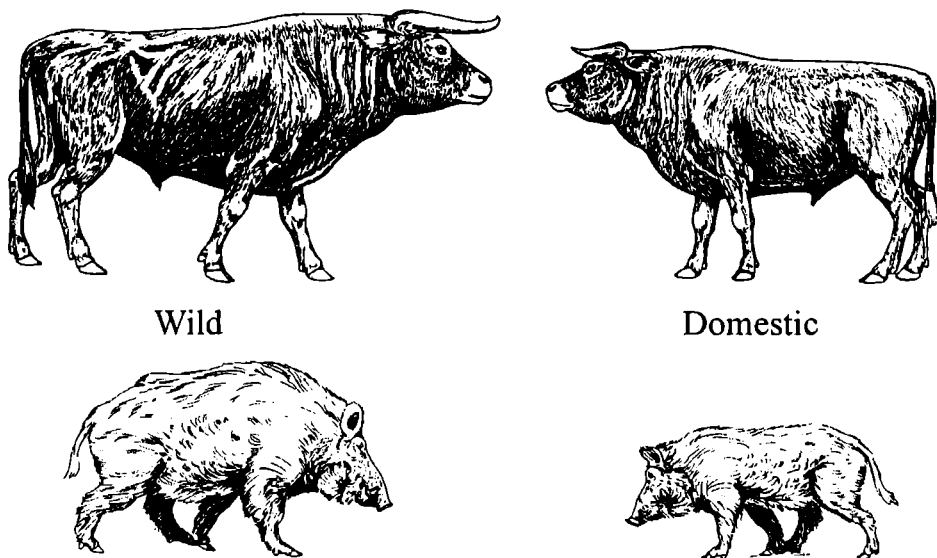


Fig 2: A graphic reconstruction of Neolithic cattle and pig in relation to their wild counterparts (after Uerpmann 1979)

Although the osteometric standard developed by Angela von den Driesch (1976) thirty years ago has become a convention in archaeozoology, comparisons between bone measurements are often hampered by the lack of widely published standard specimens or populations whose measurements would make the uniform treatment of osteometric data derived from heavily fragmented material possible. Since traditional estimations of withers height and sex (*Nobis G.*, 1954, *Calkin V.I.*, 1960 for cattle; *Teichert M.*, 1969 for pig) require bones preserved in full length, any method utilizing information from fragmentary remains is of additional use.

On the basis of over three decades of hands-on experience in central and south-eastern Europe, Bökönyi (1995) summarized

empirically established size ranges for wild pig and aurochs. Given the situation, his results were considered worth applying to the material under discussion here. Characteristics to be considered before using the empirical size ranges published by Bökönyi may be summarized in the following SWOT list:

a) *Strengths*: The use of parameters based on local wild populations is indispensable in domestication studies (Rowley-Conwy P., 1993, 115). Bökönyi's ranges encompass metric variability observed in the area between the Carpathian Basin and the Balkans where relevant studies were carried out (cf. Bökönyi S., Bartosiewicz L., 1987).

b) *Weaknesses*: Bökönyi's guidelines consist of nothing but minimum and maximum values, hampering in-depth statistical analysis. These are, however, not concrete, individual measurements, but reflect Bökönyi's personal expertise on what is "small" or "large".

c) *Opportunities*: Based on *en masse* regional observations made on Neolithic materials, these size limits offer the only local benchmark for the gross evaluation of fragmentary data from Schela Cladovei, a site within the same time period and region.

d) *Threats*: These limits were written up on the basis of adult individuals, but without distinction by sex and do not directly refer to source materials or the number of specimens. Their direct, mathematical use may thus lead to cumulative bias.

While the statistical applicability of these values is considered difficult, empirical size limits for the few *measurable* aurochs and wild pig bones recovered at Schela Cladovei are cited in Table 3. Bökönyi's (1995, 7-10) selected size ranges listed in this table have been completed with median values for the purposes of this study.

Owing to sexual dimorphism, the size distributions of wild animals under discussion here are certainly bimodal, a trend that tends to diminish only with the advancement of domestication (Bartosiewicz L., 1997, 53). As a gross tendency, however, it may be assumed that adult aurochs and wild pig smaller than the median would originate from females, while the values above the mid-point of Bökönyi's ranges represent males. Given the fact that Bökönyi's theoretical size ranges do not derive from a concrete, biological population, the possibility that differential sex composition may distort medians in pooled samples is less likely to be a source of bias.

Table 3: Minima/maxima (Bökönyi S., 1995) and median values (parenthesized, bold) of aurochs and wild pig relevant to the measurable skeletal elements available at Schela Cladovei.

Aurochs	Length	Proximal breadth	Distal breadth	Proximal depth	Distal depth
M3 tooth	41.0-49.5 (45.3)				
radius		91.0-122.0 (106.5)	81.0-111.0 (96.0)	44.0-63.0 (53.5)	48.0-81.0 (64.5)
metacarpus	219.0-259.0(239.0)	66.0-89.5 (77.8)	68.5-88.0 (78.3)	42.0-65.0 (53.5)	37.0-51.0 (44.0)
tibia		112.0-133.0 (122.5)	68.5-90.0 (79.3)	119.0-134.0 (131.5)	55.0-70.0 (62.5)
astragalus	77.0-97.0 (87.0)		51.0-69.0 (60.0)		43.0-56.0 (49.5)
metatarsus	255.0-300.0 (277.5)	55.0-71.0 (63.0)	62.5-80.0 (71.3)	32.0-68.5 (50.25)	36.0-44.5 (40.3)
Wild pig					
M3 tooth	40.0-55.0 (47.5)				
M1-M3 tooth	76.0-118.0 (97.0)				
axis	60.0-63.0 (61.5)				
scapula			28.5-41.0 (34.8)		43.0-59.0 (51.0)
radius		35.0-43.0 (39.0)	40.5-48.0 (44.3)	25-30.5 (27.8)	30.0-38.0 (34.0)
tibia			35.5-42.0 (38.8)		30.0-37.0 (33.5)
astragalus	49.0-57.0 (53.0)		27.0-33.0 (30.0)		35.5-42.5 (38.0)

Having reviewed a number of analytical possibilities, bone measurements from Schela Cladovei were plotted against Bökönyi's extreme values by calculating individual scores within standardized ranges ($R=1$). Standard range scores (SRS) for each measurement were obtained as follows:

$$\text{SRS} = (\text{individual measurement} - \text{median}) / (\text{maximum} - \text{minimum})$$

The logic of this calculation follows that of Uerpmann's size index method (Uerpmann H-P., 1979, appendix 2) based on mean values and standard deviations, but it looks undeniably simpler and more robust, given the absence of a series of re-measurable reference skeletons. It is aimed at maximizing the use of meagre individual measurements by comparing them to the standardized parameters of that measurement in a base 'population', understood in a purely empirical sense. Thanks to this procedure, however, the configuration of all measurements can be studied within the same histogram, thereby adding up the number of measurable bone specimens. Using the SRS method, a measurement identical to a minimum recorded by Bökönyi gives an $\text{SRS} = -0.5$; one identical to a median gives an $\text{SRS} = 0$, and one identical to a maximum gives an $\text{SRS} = +0.5$.

Results

Prior to the metric evaluation of our data, it was worth considering whether it was possible that bones from wild animals might be more likely to be measurable than domestic ones. Diachronic comparisons between archaeozoological assemblages suggest wild animals are often treated in a different way with regard to butchery, i.e. bones of wild animals are far less intensively butchered than those of domesticates. Wild animals also often tend to be represented by more easily recognizable older individuals, thereby increasing their relative contribution to the measurable set. Tables 4 and 5 outline this difference for the animals under discussion here. In these tables, no *a priori* distinctions were made between the measurable bones from wild *vs* domestic animals.

Table 4, a summary of bovine bones, shows that a major portion of domestic-looking, relatively small cattle bone fragments also occurred in Mesolithic contexts, although none of them were preserved in a measurable state. On the other hand, a dozen measurable bones with no precise chronological affiliation beyond “early prehistoric” (i. e. unknown) were also included in the analysis.

Table 4. The numbers of all refuse bones and measurable specimens from Bovines (aurochs and possibly domestic cattle).

	NISP from Table 1			Numbers of measurement data from Table 2	
	Wild	Domestic	Total	Measurements	Measurable bones
Mesolithic	12 (14%)	75 (86%)	87	0	0
Neolithic	53 (12%)	400 (88%)	453	28	13
<i>(Unknown)</i>				32	12
Total	65	475	540	60	25

It is clear that the number of measurable bones is very small both in absolute and relative terms ($25/540 = 4\%$). Given the overwhelming dominance of “domestic” size cattle fragments among the refuse material, one may hypothesize that, in the case of comparable carcass treatment, the majority of remains will fall within the size range of domestic cattle. This is especially the case for the large Early Neolithic assemblage.

Table 5, a summary of pig bones shows that bones of domestic-looking, relatively small pigs were also found in Mesolithic contexts. In this

case two measurable bones with no precise chronological affiliation beyond “early prehistoric” (i.e. unknown) were included in the calculations.

Table 5: The numbers of all refuse bones and measurable specimens from Suids (wild boar and possibly domestic pig).

	NISP from Table 1			Numbers of measurement data from Table 2	
	Wild	Domestic	Total	Measurements	Measurable bones
Mesolithic	48 (42%)	67 (58%)	115	10	5
Neolithic	39 (37%)	66 (63%)	105	4	4
(Unknown)				6	2
Total	87	133	220	20	11

In this case, the proportion of measurable bones is similarly small: 11 out of 220 bones (i.e. 5%), while differences between the fragments possibly originating from wild or domestic pig are smaller in the overall refuse bone material. Should different NISP proportions be reflected in the distribution of SRS values for both Bovines and Suids, the idea of different carcass manipulation for wild animals will gain support.

SRS values calculated using all relevant Bovine bone measurements from Schela Cladovei are shown in the histogram of Figure 3. Although, in principle, growing bone tends to attain full length before it reaches its final breadth and depth (Davis S., J., M., 1996, 599), measurements taken on the same individual specimen tended to yield comparable SRS values, regardless of their geometrical dimension.

The more-or-less trimodal configuration of cases is largely concentrated around the $SRS=-0.5$ limit, that is, the minimum of aurochs measurements using Bökönyi’s criteria, spread between 0 and -1. Only the greatest length of a large astragalus is greater than the median value of aurochs. It seems that although some of the larger bones may originate from aurochs, individuals reaching the size of wild bulls are not represented in the material. Thus, most animals in the group of cases left of the aurochs minimum ($-1.0 < SRS < -0.5$) appear to originate from adult domestic cattle which, given the Neolithic or at least unknown (Table 2) origins of Bovine bones does not contradict Bökönyi’s criteria. Since almost 90% of all Bovine bones were considered domestic in the Neolithic assemblage, the hypothesis concerning differential carcass treatment for aurochs is not manifested in this small sample. A separate group ($SRS < -$

1.0) is formed mostly by various measurements of small cattle astragali from young individuals. This age cohort of cattle would not be represented by measurements of long bones among the data owing to incomplete epiphyseal fusion.

Distribution of SRS values for Bovines in relation to aurochs size ranges.

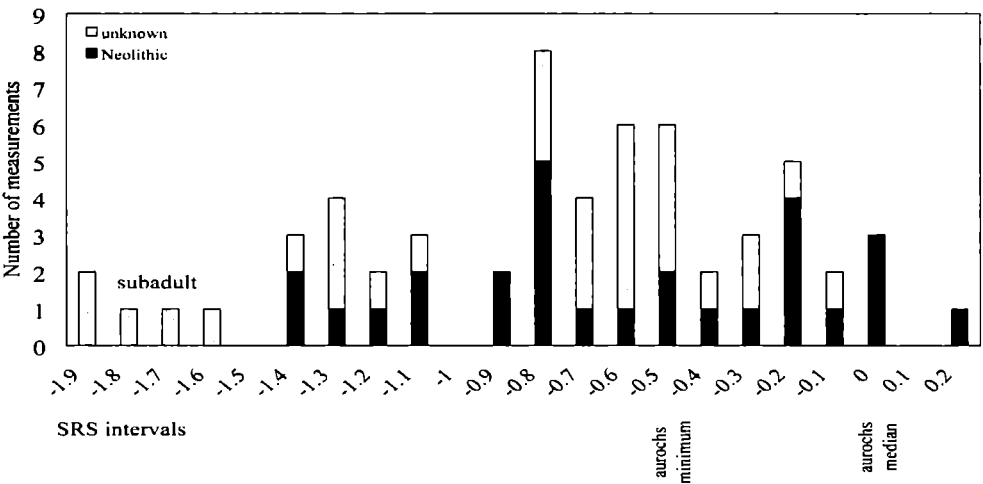


Fig 3: Distribution of SRS values for Bovines in relation to aurochs size ranges

Distribution of SRS values for Suids in relation to wild pig size ranges.

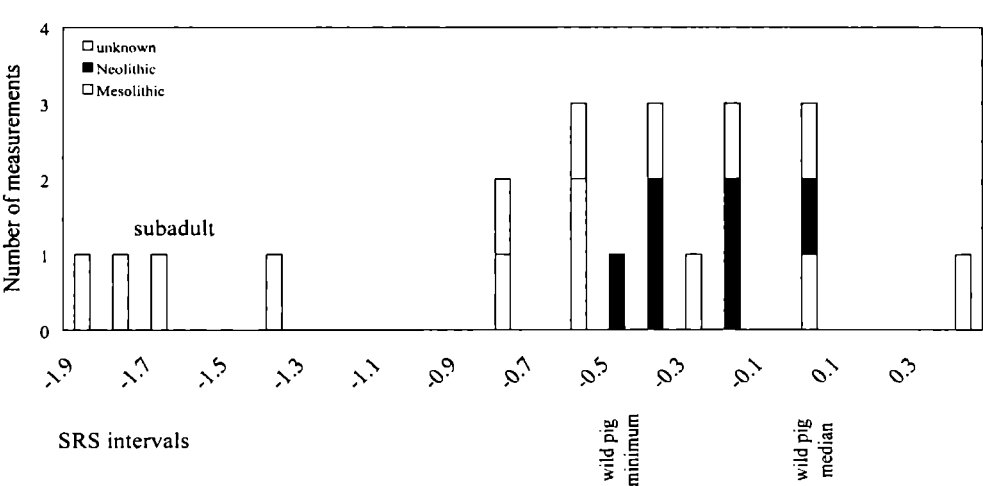


Fig 4: Distribution of SRS values for Suids in relation to wild pig size ranges

With a Nobis (1954) index reaching only 28.1% ($100 \cdot SD/GL$), and an estimated withers height of 1289.3 mm (*Calkin V.I., 1962*), the only Bovine metacarpus preserved in full length seems to have originated from a relatively tall cow; this stature corresponds to the average withers height of some unimproved modern breeds such as Belarus Red cattle. Therefore, even in the absence of reliable stratigraphic information, this bone is likely to have belonged to Neolithic domestic cattle; most authors agree that even female aurochs reached a withers height of at least 1500 mm in central Europe (*Guinard C., 1994, 180*).

SRS values for the smaller set of Suid measurements are shown in Figure 4. The overall pattern of this group is very similar to that displayed by the Bovine measurements. The only major difference is the apparently greater contribution of wild pig to the sample, although very few cases fell above the $SRS=0$ median value of Bökönyi's size range. This trend reflects a possible difference between the chronological compositions of the Bovine and Suid set of measurements; the majority of pig bones originated from verified Mesolithic contexts and thus may be hypothetically assigned to the wild ancestor. Nevertheless, there is a sufficiently large number of Neolithic bone measurements to attribute some specimens, falling below Bökönyi's wild pig threshold, to domestic animals. The group of small cases in this histogram is made up by transversal measurements of Mesolithic pig bones which, however, originate from subadult individuals and may thus also represent wild pig. There is a clear overlap between the size-ranges of the pig bones from Mesolithic and Neolithic contexts, which does not contradict the idea of interbreeding between wild and domestic populations as suggested in previous studies based on archaeozoological (e.g. *Bolomey A., 1973*) and genetic (*Larson G., et al. 2005*) evidence. The withers heights estimated from a Mesolithic astragalus and an adult radius using coefficients by Teichert (1969) are 850.2 mm and 1051.4 mm respectively, both corresponding to the stature of modern wild pig in Hungary (sows 700–970 mm, boars 770–1080 mm at 3 years of age; *Faragó S., 2002, 367*), although prehistoric wild pigs are known to have been larger than their modern counterparts.

Discussion

The graphic representation of Mesolithic/Neolithic cattle and pig bone measurements from Schela Cladovei does not contradict the size

ranges established in Bökönyi's 1995 article. Even the sketchy, informal parameters based on his empirical work are of help in analyzing the small data-set available for study. In addition, the size distributions of pooled bone measurements show a major component of domesticates, a trend congruent with the picture gained from NISP values.

The interpretation of SRS diagrams, however, is open to discussion. For one thing, this form of presentation clearly shows a disadvantage shared with the calculation of traditional size indices: the final configuration of data is dependent on the growth characteristics of both the skeletal element and its measurable dimensions. Ageing based on the epiphyseal fusion of long bones, an important method (*Habermehl K., H., 1961*), often only provides a *terminus ante quem* age at slaughter if unfused bones are encountered in the faunal material. Fragments of early fully fused epiphyses may sometimes originate from younger animals which have not yet reached adult size, especially in terms of robusticity (transversal bone measurements). The inclusion of such bones into more sophisticated calculations may be a source of considerable bias. It may be worth citing here the fusion ages of long bones discussed in this study (Table 6).

Table 6: Ages of epiphyseal fusion for the bones used in calculating SRS values in this study (*Schmid 1972, 75*).

Cattle	Proximal epiphysis	Distal epiphysis
radius	1.0-1.5 years	3.5-4.0 years
metacarpus	fused by birth	2.0-2.5 years
tibia	3.5-4.0 years	2.0-2.5 years
metatarsus	fused by birth	2.0-2.5 years
Pig		
radius	1.0 year	3.5 years
tibia	3.5 years	2.0 years

There may be minor inherited differences in the age of epiphyseal fusion in modern domesticates. Moreover, growth and development are directly influenced by environment/nutrition as well. Nevertheless, it is evident from these data that the animals are not fully mature at the ages listed. This, however, is expressed mostly in the transversal dimensions of bones under discussion here. Post fusional growth, e.g. in bones of the hock joint, may also be dependent on the mobility of the animal species in

question (*Davis S., J., M., 1996, 599*) which may explain the high contribution of astragali to the group of outliers in both graphs.

Given these intricacies, measurements taken on fragmented bone may not always be a reliable predictor of an animal's domesticated status. In the case of the Schela Cladovei data, it may be accepted that several of the Neolithic small Bovine bones originate from domestic cattle, although even this reasoning is somewhat circular, being rooted in the general rule that domestic cattle and pig tend to be smaller than their wild ancestors.

While very large prehistoric bones may undoubtedly originate from aurochs and wild pig respectively, recently Rowley-Conwy (1995, 125) has called for extreme prudence when interpreting small bones as those of domestic cattle and pig in Mesolithic contexts in Europe. The problem of animals representing transitional size groups, to a great extent, is a product of sexual dimorphism that creates a size overlap between large domestic males and small wild females which coincides with the size of transitional phenotypes possibly produced by the interbreeding between wild and domestic stocks (*Benecke N., 1994, 101*). This trend is characteristic of Late Neolithic Bovines in the Carpathian Basin when aurochs was still abundant in the area. According to both historical and ethnographic sources, back crossing has been a well known form of upgrading domestic pig stocks until the present day.

Omnivorous wild pigs may have been attracted to human habitations early on, and during the Neolithic they may also have crossed with the domestic population and again been difficult to recognize on a purely osteological basis. This possibility is worth considering for two reasons. Evaluating the prehistoric fauna of Icoana, Bolomey (1973, 51) "rejects the term of 'domestic' for the pig population at the Iron Gates, but agrees that to some extent it suffered human control". Moreover, in addition to their small percentage in the Mesolithic assemblage of Schela Cladovei, pigs in general seem to have played a negligible role in the apparently mobile pastoral animal husbandry of the Starčevo-Criș culture. Therefore uncertainties in stratigraphic and zoological identification interfere with the observation of their aforementioned 'control' by humans.

Conclusions

Evidence from Britain, Ireland, southern Scandinavia (*Bonsall C., et al. 2002a, b; Rowley-Conwy P., 2004*) as well as Hungary (*Bartosiewicz L., 2005*),

suggests that contrary to post-processual theories mentioned in the introduction, Mesolithic foragers did not seem keen on intensifying their economy, while Neolithic populations were engaged in food production (cultivating plants and raising domestic animals) and tended to be sedentary.

The prehistoric occurrence of sheep bones at the site of Schela Cladovei is indicative of the Early Neolithic eastern Mediterranean influence in the Iron Gates region. The extreme size differences between domestic animals and their wild counterparts at Schela Cladovei suggest that the transition to agriculture took place at a rapid pace, which further implies that the likelihood of local domestication is slight. Domestic cattle too were very probably imported. Of the major domestic animals, pig (and dog) are the most likely to have been mixed with local wild stock. Furthermore, with the appearance of domestic livestock there seems to have been a decreasing emphasis on the relative contribution by fishing (Table 7).

Table 7. Summary of domestic, wild and aquatic resources (NISP excluding deer antler fragments).

	Domestic mammals	Wild mammals	Tortoise/Anura	Fish	Totals
Mesolithic	263 (15%)	283 (16%)	66 (4%)	1191 (66%)	1803
Neolithic	822 (42%)	381 (19%)	33 (2%)	734 (37%)	1970

The osteometric differentiation between cattle and pig and their wild ancestors therefore should be of fundamental importance at this site as well. The problem, however, is that its manifestation is burdened by the consonance between numerous phenomena (sexual dimorphism, differential epiphyseal fusion, regional size differences in the wild populations), which make singling out the quantitative effects of domestication difficult.

It is this complexity that makes it necessary to explore all possible means of improving our understanding of the effects of domestication on size. The study of a small data set from Schela Cladovei using a special method (standardized range scores) developed on empirical observations by Bökönyi (1995) has shown that the inhabitants of this site in the Iron Gates exploited both wild and domestic cattle during the Neolithic. It was

more difficult to identify the Mesolithic Suid remains from this site as those of domestic pig.

As with Uerpmann's size index, SRS values are dependent on both the reference material (in this case Bökönyi's size ranges) and skeletal parts studied. However, when these potential sources of bias are identified and kept in mind, this method contributes interesting details to the emerging picture of animal exploitation in the Iron Gates Gorge. The evaluation of future data along the same lines is expected to produce an increasingly coherent body of information.

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SYSTEMS OF RAW MATERIAL PROCUREMENT AND SUPPLY IN UPPER AND EASTERN THRACE AND SOUTH MARMARA REGION – VII AND VI MILL BC

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Keywords: *Bulgaria, Turkey, raw material, Early Neolithic*

In this paper an attempt to reveal the different systems of raw material procurement and supply in the territory of Northern and Eastern Thrace and South Marmara region have been done and the results are presented further down. (Map 1)

Northern Thrace - systems of raw material procurement and supply – VII mill BC

In the territory of Northern Thrace a well defined system based on acquiring with high quality flint raw material had functioning. The former was connected with white - painted and dark-polished pottery phases in this area during the first half of VII mill BC.

In Northern Thrace the appearance of very high quality flint in all Early Neolithic assemblages could be established. The flint is yellow, yellow-reddish to brown and grayish in colour, opaque, with patterns of stripes or spots of varying density. (*Hiller S., Nikolov V., 2000*)

This type of raw material is registries in shape of relatively big blades in all sites chronologically relating to the first half of VII mill in Northern Thrace.

Up to now flint cores from the above-mentioned high quality yellow, yellow-reddish raw material have not been found in all Early Neolithic settlements of Bulgarian Thrace. This fact suggested that the core preparation and exploitation was done off the settlements and very likely somewhere more or less close to the places of flint provenance. This way could be explained the fact that in all Early Neolithic flint chipped stone

assemblages in Upper Thrace mostly blades and blade tools from this type of flint variety have been found.

Because of lack of seaving it is impossible to realize where this blank was secondary modified – in the work shop or in the settlements because seaving wasn't applying and part of the information was lost for ever.

As a whole the blade manufacture of Karanovo I and II and Azmak-Early Neolithic layer is characterized by very high level of technology. This blade technology was linked with very highly developed level of subsistence activities and with other social, economical and cultural level and/or context.

From the other side the very high degree of artifact concentration' of this kind of flint in Karanovo I and II and Azmak - Early Neolithic level, allow to define the Karanovo-Azmak population as bearers and owners of this very high develop and sophisticated technology.

It is very likely that namely this population organized trips to the flint locations in order to fill up their supplies. Probably it was the Early Neolithic population of Karanovo and Azmak that was maintained and controlled all elements of the entire production chain – from raw material accusation to all stages of core processing and to artifact usage.

In this case the area of highest concentration of specimen type Karanovo I-II and Azmak – Early Neolithic layer could be considered as a Centrum of this technology. Of course the reason for such suggestion is not only the presence of large amount of these blades in the area mentioned above. The 'technological features' should be scrutinized as a part of the whole complex of characteristics which referred these tells as key-sites during the Early Neolithic period in Northern Thrace.

In the same time the area of Karanovo and Azmak could be considered also as a "departure area" – or the area from where the blades could be distributed to the other points. Namely modified blades done on high quality flint raw material were distributed – even to the Maritsa/Meric delta'.(see below). These blades, which were found in other area come via exchange and predetermined their small quantity.

Unfortunately, it is still unknown the exact places of the flint outcrops or flint concentration and the location of the work shops where the raw material was gathering and core preparation and core reduction were carried out but nevertheless the pattern appears to be a high quality flint concentration in Northern Thrace in the first half of VII mill. BC

Having in mind the results from the mineralogical research in the territory of South Bulgaria and especially in the area of Northern Thrace – the former could be considered as potential zones for raw material supply with already described high quality flint raw material during the Early Neolithic period – first half of VII mill BC. (*Gatsov I., Kurcatov V., 1997; Kurchatov V., (in print); Dr. Ch. Nachev, personal information.*)

This way could be presumed the existing of relatively short and middle distance systems of supply with high quality flint raw material during the Early Neolithic period – around 6000-5500BC in Northern Thrace.

These systems had functioned in the area of Northern Thrace where the distances between the Karanovo-Azmaç area to St.Iliia hills, Sredna Gora maintains and Eastern part of Rodopes are respectively between 80 and 100 km.

It should be concluded in the very beginning of the Early Neolithic period in Northern Thrace well organized stone production was part of the substantial strategy of the prehistoric population. The former is reflected in the functioning of very sophisticated production chain and very well worked system of exchange of long distance.

To face these three elements of the system: acquisition, production and distribution and put them into practice by the same population - supposed of existing of some kind of labor and social differentiation which was beyond the separation by sex and age.

Eastern Thrace and South Marmara region - systems of raw material procurement and supply – VII - VI mill BC

From the region of Eastern Thrace the chipped stone assemblages from the prehistoric settlements of Asagi Pinar, Hoca Çeşme have been processed.

As far as raw material procurement at Hoca Çeşme is concerned the former was based on three main groups of raw materials, each with different physical properties. The raw material presented by microcrystalline quartz, chert, and quartzite is undoubtedly with local origin. Behind this model was population with low level of technological possibilities and very limit know-how concerning core knapping and tool manufacturing.

In the same time a small number of yellow, yellow/brownish or grayish flint with or without grey inclusions and obsidian as well were pointed out as extra local ones.

It should be underlined the occurrence of very high quality dark yellow, yellow/brownish flint with grey inclusions in shape of few blades with high abrupt and semi abrupt retouch in phase 2 at Hoca Çeşme settlement.

The size of the blades, the quality of the flint and the lack of any corresponding artifacts as cores, crested and cortical specimens, debris and blades allow considering them as imports from Northern Thrace or from the area of Karanovo I-II settlements and Azmak – Early Neolithic layer. This type of flint raw material and the type of the above mentioned artifacts were emblematic for the earliest stages of Early Neolithic in Bulgarian Thrace.

The occurrence of these blades reflects a relatively long distance procurement of raw material– from Upper Thrace to the North towards Aegean Sea shore to the South. If it can be taken into account the straight line between these settlements displays considerable distance around 180 - 200 km. (Map 2)

In this case it could be possible to speak that the east sea shore of the Aegean (Hoca Çeşme, phase II) and was the point to which the Karanovo I-II blades reached. This means that above presented-settlements at the Aegean and at the Marmara seas were the southeast points of the exchange system functioning between Northern Thrace (Karanovo - Azmak) and Eastern Thrace (Hoca Çeşme).(Fig.1; Fig.2)

About the other kind of extra local raw material such as obsidian the presence of some pieces could be considered as an evidence of some kind of activities connected with obsidian system of procurement, blank acquiring and tool manufacturing.

How was mentioned above due to the fact that results about the place or places of obsidian provenance have not been obtained yet - it is impossible to point out the mechanism of this procurement. The presence of small flakes, debris, crested specimen in the assemblages – lead to the conclusion that the obsidian core preparation and core knapping processes were carried out on spot – in frame of the settlement or near by. Simultaneously the obsidian artifacts, found in very small quantity indicated of incoming craftsmen who brought probably perform cores to the settlements where the core reduction was done.

About the later occupation of the population from Aşağı Pinar in Turkish Thrace the presence of obsidian is already zero – only 2 items have been found among more than 5000 pieces. The entire raw material structure consists of specimens done on local varieties flint and chert, which were intended for different purposes and the technological and typological profile of stone industry and labor organization were totally different.

It is interesting to point out that only two pieces from Aşağı Pinar in the chipped stone assemblage from the settlement of Karanovo – Karanovo III (*Hiller S., Nikolov V., 2005, Taf.213, 1, Taf. 211,10*) have been found. These are “plate” core specimen done on already presented raw material variety 17 and micro perforator as well.

At this stage of research it is impossible to conclude whether or not these two pieces can be considered as evidence of some kind of contact between both areas – respectively in Upper and Eastern Thrace.

Up to now it could be underlined only that approximately on the level of Karanovo III- Aşağı Pinar 5 periods single artifacts were found in Karanovo III, derived from Eastern Thrace – settlement of Aşağı Pinar, period 5 or this was the time span covering the period around 5500-5300/5200BC (*Parzinger H., Schwarzberg, H., 2005, 68, 418-419*).

South Marmara region - VII mill BC

From the territory of South Marmara region-the chipped stone assemblages from the prehistoric sites at Ilipinar, Pendik, Fikir tepe and Mentese have been taken into account.

At Ilipinar in the earliest phases X and IX and at Mentese- basal layer-obsidian cores have been found. Similar specimens come also from the assemblages from Fikir tepe and Pendik. It is very likely that obsidian concretions or perform cores were brought to the settlements and then the former were processed on spot – in all sites mentioned above.

Having in mind the possibilities of the groups from above mentioned settlements to obtain flint blades and to manufacturing flint tools it could be presumed also that they were able to manage with obsidian concretions and cores. Namely the population of the Ilipinar, Mentese, Fikir tepe and Pendik was able to maintained obsidian blade production; the pressure and indirect percussion techniques were not a secret for them.

As far as the supply of local raw material of Ilipinar, Mentese, Fikir tepe and Pendik populations’ is taken into account – in all settlements

different raw material varieties from the surroundings were gathered. This kind of procurement did not need some sophisticated methods but the population had enough experience to make a maximum good choice in this direction.

The relatively good quality flint has been observed in shape of different type of artefacts in all chipped stone assemblages from these settlements. As a best proves could be considered the exploitation by pressure and punch techniques of so call bullet cores.

Concluding it should be emphasized that in the end of VII mill. BC and VI mill BC in the territory included between Stara Planina, Rhodope, Black Sea and Marmara Sea existed different models of raw material procurement, which were determined by different factors - environmental and cultural and which revel different system of organization.

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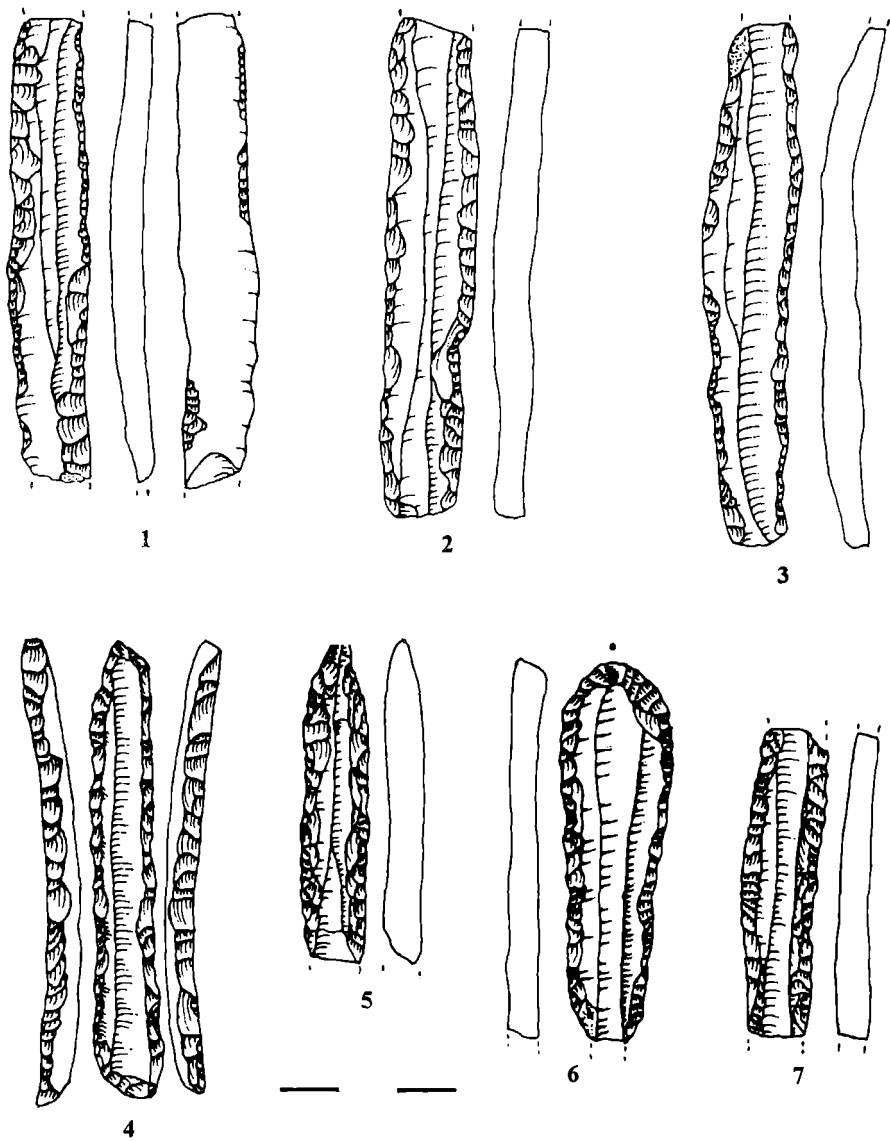


Figure 1-7 blades with high retouch. 1-3 Karanovo I-II; 4-7 Hoca Ceşme phase 2

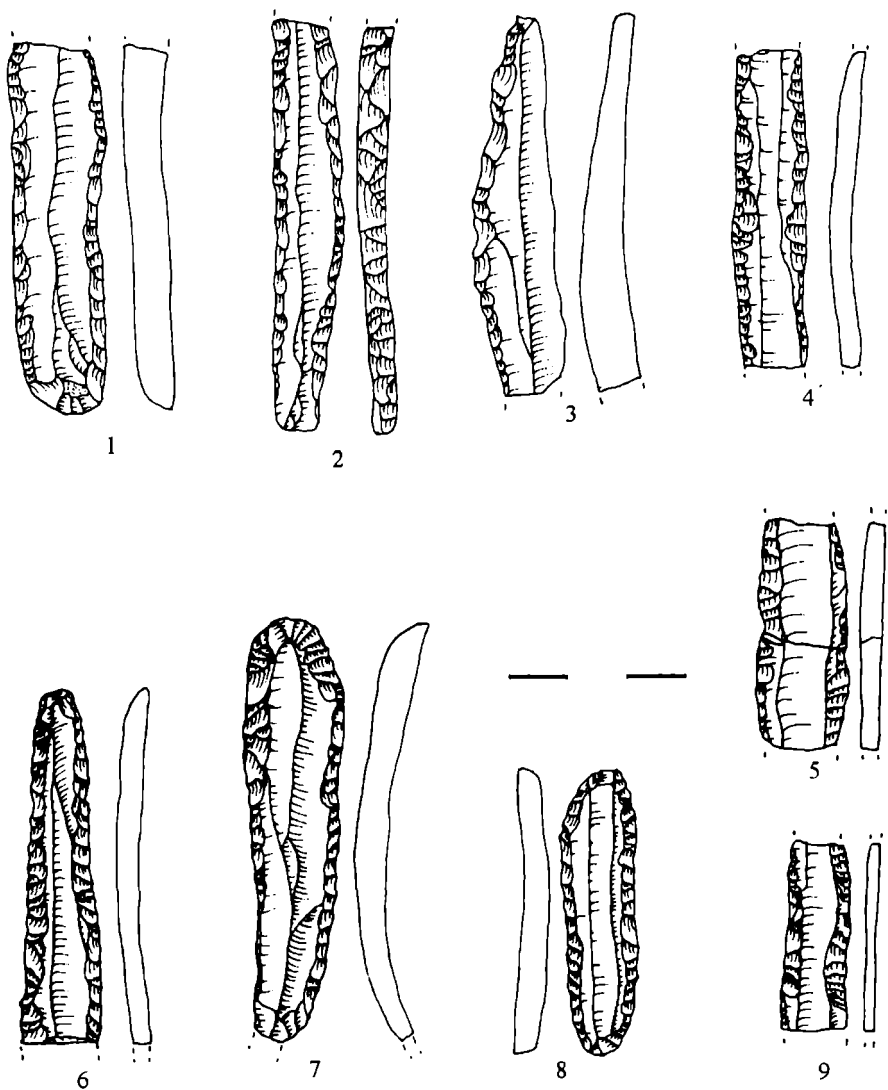
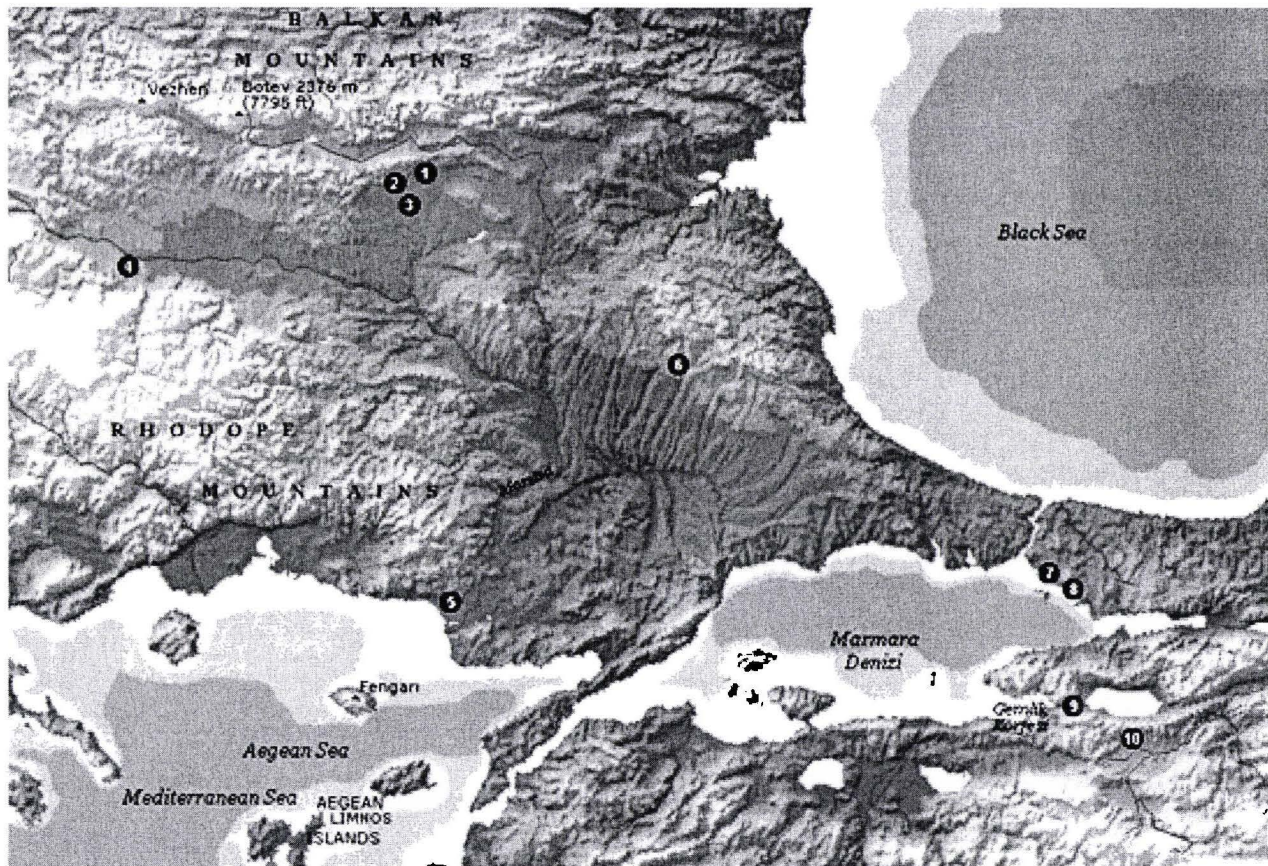


Figure 1-9 blades with high retouch. 1-4 Karanovo I-II; 5-9 Hoca Çeşme phase 2



Map 1: Prehistoric settlements in the area under study – VII Millennium BC and VI Millennium BC.

1 – Karanovo; 2 – Okruzna bolnica; 3 – Azmak; 4 – Kapitan Dimitriev; 5 – Hoca Çeşme;

6 – Asagi Pinar; 7 - Fikir tepe; 8 – Pendik; 9 – Ilipinar; 10 – Menteşe



Map 2: The exchange system area' between Northern Thrace (Karanovo - Azmak) and Eastern Thrace (Hoca Çeşme).
1. Karanovo; 2. Hoca Çeşme

ON IMPORTANCE OF STUDY OF THE NEOLITHIC GROUND STONE INDUSTRY IN THE TERRITORY OF SOUTHEAST EUROPE

Dragana Antonović

Keywords: south-east of Europe, neolithic ground stone industry

Study of the ground stone industry is relatively new discipline in the archaeology of the southeast Europe. Not before long our entire knowledge about this problem was related to just a few sites of the Vinča culture first of to the material from the eponymous site. The probable reason for that was that large amount of the ground stone artifacts – more than 1200 specimens had been found at Vinča while from the other Neolithic sites sometimes only a few tools of this kind were known. The material from Vinča has been studied and analyzed on many occasions, mostly only typologically but today it is the starting point for the investigation of the ground stone industry of the Vinča culture and the Neolithic in general (*Antonović D.*, 1992; 2003). Couple of years ago this material was the only ground stone Vinča culture material studied in detail. However, in the last three decades ground stone material from many Neolithic sites was thoroughly studied or at least examined. These sites in Serbia are Belovode, Blagotin, Crnokalačka Bara, Čučuge, Divostin, Donja Branjevina, Drenovac, Gradac, Grivac, Hajdučka Vodenica, Lepenski Vir, Lipovac, Naprelje, Padina, Pavlovac, Petnica, Pločnik, Predionica, Selevac, Supska, Velesnica, Vlasac, Zbradila, including new excavations at Vinča (*Antonović D.*, 1997; 2000; 2002; 2000; 2004; 2004a; 2006; *Babović L.*, 1984, 95 – 96; 1986, 96 - 97 ; *Prinz B.*, 1988; *Srejskić D.*, *Letica Z.*, 1978, 98 – 103; *Voytek B.* 1990).¹ Therefore, after the mentioned investigations it is quite possible today to comprehend the character of the Neolithic ground stone industry within a larger territory but also to see more clearly the importance of these investigations in the territory of the entire southeast Europe because just the stone raw materials could indicate to the greatest extent the possible intercultural contacts and influences.

The Neolithic ground stone industry in the territory of the present-day Serbia reveals from the technological point of view certain territorial characteristics. It concerns three technological circles related to the production of the stone tools. First and so far best investigated is the central Serbia – Vojvodina circle, second is the Iron Gates circle and the third is South Morava – Kosovo circle, which is so far the one investigated in a smallest degree (Fig. 1).

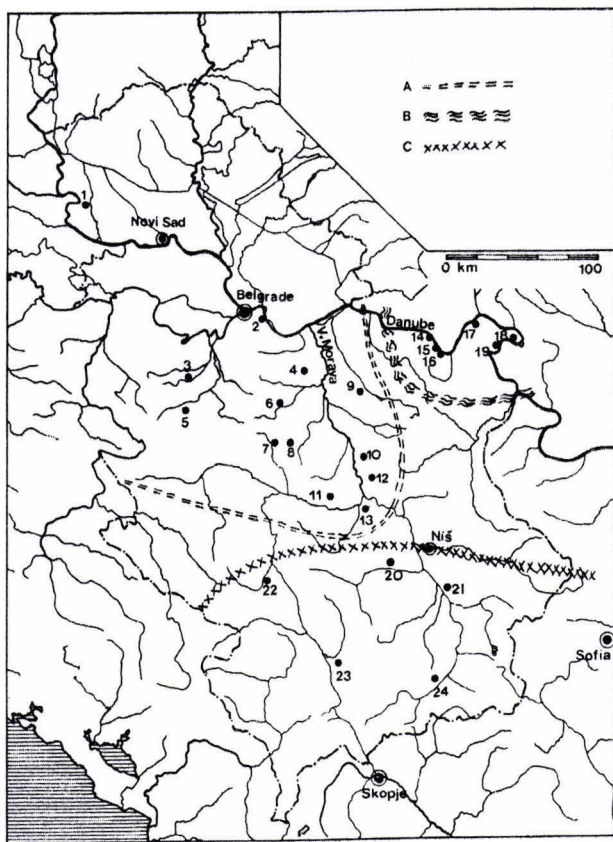


Fig. 1. Technological circles related to the production of the stone tools:
A. Central Serbia – Vojvodina circle, B. Iron Gates circle, C. South Morava – Kosovo circle.
Neolithic settlements: 1. Donja Branjevina, 2. Vinča, 3. Čučuge, 4. Selevac, 5. Petnica, 6. Lipovac, 7. Grivac, 8. Divostin, 9. Belovode, 10. Supska, 11. Blagotin, 12. Drenovac, 13. Crnokalačka Bara, 14. Padina, 15. Lepenski Vir, 16. Vlasac, 17. Hajdučka Vodenica, 18. Zbradila, 19. Velesnica, 20. Pločnik, 21. Gradac, 22. Naprelje, 23. Predionica, 24. Pavlovac

First circle includes the territory of the central and western Serbia, Morava valley and Vojvodina and it is related to the occurrence and evolution of the ground stone industry in the eastern Bosnia. This circle includes the best investigated sites when the ground stone industry is concerned: Vinča, Divostin, Selevac, Grivac, Donja Branjevina, Belovode, Supska, Petnica, etc.² The ground stone industry is represented here by many tools first of all adzes, axes and chisels made of characteristic fine-grained sediment and contact-metamorphic rocks of gray and gray/green color. This statement relates particularly to the central Serbia sites but stone tools were also very well represented at the Neolithic sites in Vojvodina already from the early phases of the Neolithic as it is especially well confirmed by the finds from Donja Branjevina. Disregarding the distance of many sites from the raw material sources the ground stone industry in Vojvodina makes uniform entity with the industry in central Serbia when the forms of the tools and selection of rocks for their manufacture are concerned. The ground stone industry in the central Serbia – Vojvodina circle has the continual evolution during the entire Neolithic period with standard tool shapes and selection of the raw materials for their production. The ground stone tools from the sites in the mentioned regions is usually present in the great quantity and mostly related to the woodworking.

Second, the Iron Gates circle includes Mesolithic³ and Neolithic sites investigated as segment of the rescue excavations projects Djerdap I and Djerdap II: Padina, Lepenski Vir, Vlasac, Hajdučka Vodenica, Zbradila, Velesnica, Kula, Knjepišta, Ušće Kameničkog Potoka, etc. The production of the ground stone artifacts in the Iron Gates developed independently on the Mesolithic bases and thus evolving characteristic tool shapes made exclusively of pebbles hence completely distinguishing this area from the rest of Serbia. Favorable ecological conditions made possible establishing of permanent settlements based on efficient hunter-gatherer economy, which supposed distinctive kind of the large-sized hunting and fishing tools (mallets-scepters, hammerstones, pebble-axes, mallets with grooves, fishing weights). These types of tools are characteristic of the Late Mesolithic and Early Neolithic horizons at the Iron Gates settlements but some of them continue to exist as late as the Vinča period (Zbradila). The Iron Gates Mesolithic ground stone industry was not without any doubt the predecessor of the Starčevo-Vinča tools. This is confirmed not only by the already mentioned parallel existence of the Starčevo-Vinča tools with

ground edge and the Mesolithic mallets-scepters but also by the entirely different character of these two industries. The Iron Gates industry is based on the pebble, whose natural shape was only just finished off while in other parts of Serbia the tools with ground edge had often been made on larger flakes of the fine-grained rocks of characteristic gray and gray/green color achieving thus the recognizable shape, which characterizes the Starčevo-Vinča ground stone industry.

I must mention here that stone industry from Donja Branjevina in a certain way represents the link between the first permanent settlements in the Danube basin and completely developed Neolithic cultures in this area and this link is reflected in merging of different traditions in one type of products – the ground stone tools. Ground stone tools from the mentioned site reveals when the production method is concerned very interesting technique of manufacture. The ground-edge tools were made of fine-grained rocks using the chipping technique just because of their characteristic conchoidal fracture. However, these tools because of additional grinding acquired to a certain degree the massive appearance and resembles those made of pebbles of magmatic rocks and sandstone as it was the case at the settlements in the Iron Gates. This is rather interesting attempt of the Neolithic masters at Donja Branjevina to give the appearance of more primitive tools to the objects made by more advanced technology and which according to the method of manufacture and selection of the raw materials belong to the Starčevo-Vinča technocomplex. Thus the ground-edge tools resembles in shape those found at Lepenski Vir, Vlasac, Velesnica and Padina but considering the raw materials and technique of manufacture they absolutely belong to the Starčevo-Vinča type of tools.

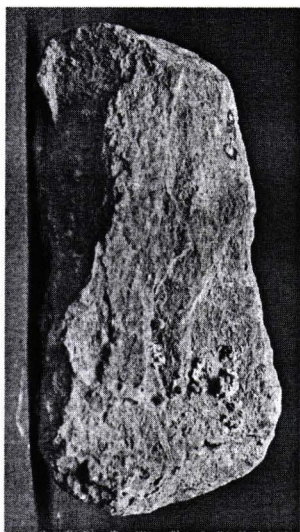
Third, South Morava-Kosovo circle represents for the time being the least investigated area when the Neolithic ground stone industry is concerned. At the sites from which the material of this kind was examined (Pavlovac, Pločnik, Gradac, Predionica, Naprelje, etc.) the ground stone tools were represented by very small number of specimens and types. In this areas even the mostly used fine-grained rocks of gray and gray/green color are not so frequent as in central Serbia and tools with ground edge were made of various magmatic and metamorphic rocks. The characteristic of these tools is small length in relation to the width so they are of rather stocky appearance.

Particularly interesting for the study of the Neolithic in the territory of Serbia is the ground stone industry from the central Serbia-Vojvodina

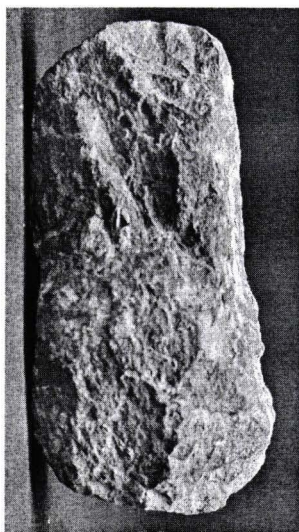
technological circle. It was noticed long time ago that in the Neolithic ground stone industry from this territory first of all in production of the ground-edge tools (axes, adzes, chisels) there is an exceptional uniformity in production. This uniformity dates already from the beginning of the Starčevo culture and it is reflected in the shapes of tools, manner of their use and especially in the selection of raw materials for their production.

When the shapes of tools are concerned it turned out that typology established for the site at Vinča is applicable to all Neolithic sites (*Antonović D.*, 2003). All shapes registered at Vinča appear throughout Serbia and there are rather rare cases of new variants of already known shapes. The standard shapes of axes, adzes and chisels appear from the earliest horizons of the Vinča culture and in already evolved shape. They all reveal that they were preceded by the long period of improvement. We must emphasize that all types of tools, which appear from the earliest Vinča horizons exist already in the material of the classic phase of the Starčevo culture and Vinča culture only inherited and improved them. This uniformity is certainly connected with the selection of the raw material and technique of production of these tools. For the production of the ground-edge tools had been chosen the rocks, which could be worked by the chipping technique. The semifinished articles were made of macroflakes, which dorsal side was additionally rounded by chipping (Fig. 2). Such method of manufacture resulted in standardization of the tool shapes as it was the case in the chipped stone industry.

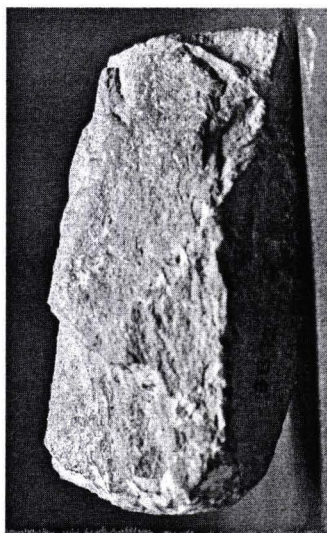
The most numerous ground stone tools – ground-edge tools – had been mostly used for woodworking usually as adzes and wedges, i.e. as tools for shaping wood into final products. The tools with traces of use characteristic of axes, i.e. tools used for felling trees are exceptionally rare. We must emphasize that it turned out, according to the traces of use, that ground stone tools were not primarily used in agriculture so the previous claim that this type of artifacts is the characteristic of the Neolithic as the agricultural tool should now be forgotten. Such way of use of the ground stone tools is much clearer when we take into consideration that Neolithic cultures in the territory of Serbia developed in the dense forest environment (*Janković M.*, *M.*, 1984) so we could assume that wood was one of the main raw materials used for large assortment of objects and as building material (*Antonović D.*, 2006, 128; *Bogdanović M.*, 1988, 71 – 72; *Stalio B.*, 1984, 34 – 41; *Todorović J.*, *Cermanović E.*, 1961, 9 – 16).



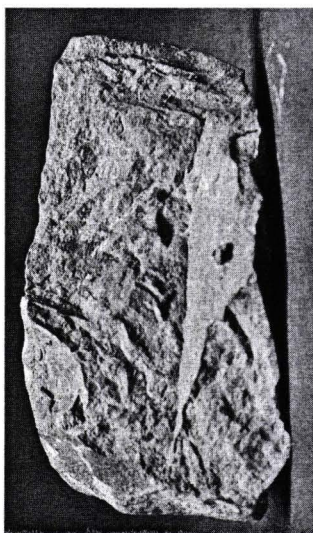
A.



B.



B



C

Fig. 2. Ventral (A, D) and dorsal (B, C) sides of the semifinished ground-edge stone tools of the Starčevo-Vinča technokomplex. Tool in A-B is 7,5 cm long, and in C-D is 7,2 cm.

Both objects were found in the Late Vinča horizon at Vinča (excavation in 2002).

The raw materials particularly characterize the ground stone industry of the Starčevo-Vinča technocomplex. Distinctive uniformity could be noticed when they are concerned. The intensive use of fine-grained rocks of various nuances of gray and gray/green color starts from phase Starčevo II. These are the rocks of different origin but of identical physical and technical characteristics like kornites, metasiltstones, fine-grained sandstones, metadiabase, metabasalt and various kinds of fine-grained schist – spotted, green, epidote, albite-epidote, chlorite-epidote, epidote-amphibole, quartz-albite-epidote, quartz-epidote. These rocks give characteristic and recognizable appearance to the Neolithic ground stone industry in the most of the territory of Serbia. The use of other rock types would occur in some phases of the Vinča culture evolution but it would never disrupt the precedence of the characteristic gray/green rocks. The only one more significant break in the continuous evolution of the ground stone industry and in established selection of raw materials is the occurrence of light white rocks in the Late Vinča horizons⁴ that also became the characteristic of this period. The tools of light white rock are present in the greatest quantity in the central and western Serbia while in other parts of the country they occur rarely and possibly represent an 'exotic' raw material, which was obtained through exchange (Bukner B., 1975, 12; Borić D., 1996, 80 – 81).

In the light of these new data it proved to be necessary and very useful to study the ground stone material from the Neolithic sites throughout the southeast Europe. It is not known for the time being whether three technological 'circles' (central Serbia – Vojvodina, Iron Gates and South Morava-Kosovo), i.e. territorial distinction of the Neolithic ground stone industry in the territory of present-day Serbia had any connections with the neighboring territories. The question arising without saying is how much this distinction is the result of the autochthonous processes during Mesolithic and Early Neolithic in the mentioned areas and whether and to what extent there were influences from the surrounding cultures. When the uniformity of the ground stone industry within Starčevo-Vinča technocomplex is concerned it must be emphasized that it is most prominent in the central Serbia-Vojvodina circle. It seems to me that just in this area the ground stone industry characteristic of the Starčevo and later of the Vinča culture is the result of the autochthonous evolution. The main characteristics of such evolution are just the raw materials – recognizable fine-grained gray/green rocks and technological method of production that they dictated. After precise petrographic analyses it turned out that there were

probably many places from whence the raw material had been brought and that were of local importance (*Antonović D., Resimić-Šarić, Cvetković*, in print). The Neolithic masters of the Starčevo-Vinča technocomplex already at the beginning of the Neolithic had thorough knowledge about the deposits of high quality raw materials and this inevitably leads to the conclusion that bearers of first agricultural cultures were natives in the territory they inhabited. Thus it turned out that stone material as chronologically almost indistinctive material, which could not be used in dating cultural layers could be the only reliable evidence in solving such questions as those concerning the autochthonous evolution of the certain culture, the influences or even complete subduing by the bearers from the neighborhood. By all appearances the stone industry is to the greatest extent the key for solving the question of origin and evolution of the Neolithic culture in the territory of the southeast Europe. The sources of raw materials and the ways of their procurement certainly had the crucial role in making contacts between populations with different cultural and technological traditions and in establishing larger technocomplexes as is, for instance Starčevo-Vinča cultural complex, which characterizes the Neolithic of the central Balkans.

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NOTES

1. This author had the opportunity to examine material from Crnokalačka Bara, Drenovac, Gradac, Lipovac, Naprelje, Pavlovac, Petnica, Pločnik and Predionik in the National Museum in Belgrade thanks to the kind help of the keepers Duško Šljivar, Ljubinka Babović and Andrej Starović.
2. Unfortunately, the material from Gomolava that is the most important group of the Vinča stone tools in Vojvodina has not yet been investigated (*Borić D., 1996, 80*).
3. Ground stone tools occur at the sites in the Serbian section of the Iron Gates already in the Mesolithic horizons.
4. Under this name are included rocks similar macroscopically and whose main characteristics are that they are of different nuances of off-white or yellowish/white color, relatively soft (except when silicified) often porous and therefore of light weight. On the basis of analyses these rocks are variously defined: as magnesite, porcelanite,

diatomeic soil, diatomeic shale, ash tuff etc. Just because of such discrepancies concerning the name of this raw material, for the time being in archaeology are most frequently used the descriptive names, which provide the closest information about the macroscopic appearance of this raw material (Antonović D., 1997a; Bogosavljević-Petrović V., 2004, 385 – 387, 411; Šarić J., 2002, 20).

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POTTERY TYPOLOGY VERSUS TECHNOLOGICAL CHOICES: AN EARLY NEOLITHIC CASE STUDY FROM BANAT (ROMANIA)

Michela Spataro

Keywords: *Banat, Early, Neolithic, pottery technology*

Preface

During 2003-2006 a project on the Starčevo-Criș pottery was carried out at the Institute of Archaeology, University College London (UK). The aim of the project was to shed more light on the Neolithisation process of the Balkan Peninsula. The methods employed to answer this question were scientific analysis of ceramics and fired clay objects, and radiocarbon dating of samples, from 20 early Neolithic sites in Serbia, Romania, and Slavonia.

The ceramic analyses were carried out in order to define possible routes of trade/exchange in the early Neolithic and the manufacturing process of fired clay objects. The radiocarbon dating was required to define an absolute chronology for the early Neolithic in this region and to identify possible routes for the spread of the Neolithic (*Biagi P., Spataro M., 2005; Biagi et al., 2005*).

Sites and their absolute and relative chronology

In this paper I will consider the correlations, if any, between the fabric and the typology of the ceramics analysed from the following sites in the Banat region of Romania: Dudeștii Vechi, Foeni-Sălaș, Foeni Gaz, Fratelia, and Parța.

The site of Foeni-Sălaș (*Greenfield H., Drașovean F., 1994; Ciobotaru D. L., 1998*) is located about 45 km southwest of Timișoara, 3 km north of the village of Foeni. Foeni Gaz (*El Susi G., 2002, 15*), is 2 km from Foeni-Sălaș, between the Bega and the Timiș Rivers. Parța (*Lazarovici Gh., et al 2001*) is located a few km south-west of Timișoara, whereas Fratelia (*Drașovean F.,*

2001) is within its southern periphery. Finally, the site of Dudeștii Vechi is located further north, close to the Hungarian border at 46°03'49" N and 20°28'38" E. The geology of the sites examined is fairly similar. According to the geological map of Timișoara, the area surrounding the site is dominated by Holocene alluvial deposits, primarily sands, clays and gravels (L-34-XXII, scale 1:200.000, Institutului Geologic Cartografi, *Petrescu I., Grigorescu C.*, 1966). The site of Dudeștii Vechi is located on Holocene alluvial deposits, primarily sands and gravels. A few clay and loess deposits can be observed some 15 km E of the site (L-34-XV, scale 1:200.000, Institutului Geologic Cartografi, *Petrescu I., Grigorescu.*, 1962).

Table 1: Early Neolithic sites of Banat: list of the fired-clay objects analysed from each site and attribution of sites to the relevant Starčevo-Criș typological phases

Site	Starčevo-Criș Phase	Ceramic samples	Cult objects	Spindle-whorls	Daub fragments	Net weights
Dudeștii Vechi	IIB, IIIA-B	20	1		3	2
Foeni Gaz	IIB	26	1	1		
Foeni-Sălaș	IIA	19	1	1	1	
Fratelia	IIA	42	1			
Parța	IIIA	24	2			3

On the basis of the typological features of the ceramic assemblage (*Lazarovici Gh.*, 1979), three sites were attributed to the second phase of the Starčevo-Criș (SC) culture, and the others to the third phase of the same culture (although two phases of the site of Dudeștii Vechi were analysed, see Table 1). Ten radiocarbon samples from four of the five sites discussed here were processed during the project. The results are shown below in Table 2 and Figure 1. The sites were inhabited in the first half of the sixth millennium cal BC. The two phases at Dudeștii Vechi seem to cover a rather short period with no indication of a gap between them.

Table 2: radiocarbon results from the sites discussed in the text. Calibrated date ranges shown are 95% confidence intervals, obtained using OxCal v3.5 and the IntCal98 dataset.

Site	SC Phase	Material	Lab number	Date BP	Calibrated date
Dudeștii Vechi	II	<i>Cervus elaphus</i> , humerus dx	GrN-28111	6990±50	5990-5720 cal BC
Dudeștii Vechi	II	<i>Bos sp.</i> , astragalus	GrN-28113	6930±50	5970-5710 cal BC
Dudeștii Vechi	II	Acorn (<i>Quercus</i> sp.)	GrA-26951	6845±40	5810-5640 cal BC
Dudeștii Vechi	III	<i>Quercus</i> and <i>Ulmus</i> charcoal	GrN-28876	6815±70	5840-5560 cal BC
Dudeștii Vechi	III	Bone perforator	GrA-24115	6920±80	5990-5640 cal BC
Foeni Gaz	II	Long bone flake	GrA-25621	6925±45	5890-5710 cal BC
Foeni-Sălaș	II	<i>Bos sp.</i> , radius	GrN-28454	7080±50	6060-5810 cal BC
Parța	III	Long bone flake	GrN-28877	6800±50	5780-5620 cal BC
Parța	III	<i>Cervus elaphus</i> , metatarsal	GrN-28460	6860±60	5850-5630 cal BC
Parța	III	<i>Bos sp.</i> , ulna	GrN-28459	6660±60	5710-5470 cal BC

Methods

Pottery and fired clay objects (figurines, altars, daub, net weights, and spindle whorls) were analysed with three techniques: by thin sectioning, Scanning Electron Microscopy in combination with Energy Dispersive Spectrometry (SEM-EDS), and by X-Ray Diffraction (XRD). About 20-40 potsherds were analysed from each site. Samples were selected on the basis of their typological and stylistic variations, in order to provide a representative sample for most typological categories, or to cover most of the typology and different surface treatments represented in the excavated material from each site.

The following ceramics and fired clay objects were analysed:

- from the site of Dudeștii Vechi, 11 potsherds from the SC phase IIB and 9 sherds from the SC IIIA-B phase were analysed. Two net weights, an altar foot and three daub samples were also studied.
- from the site of Foeni-Sălaș, 19 potsherds, and a cult object, a spindle whorl and a daub sample.

- from Foeni Gaz, 26 potsherds, an altar foot, and a spindle whorl were analysed, and five different fabrics identified.
- from Fratelia, 42 potsherds and a “black magic tool” (F. *Draşovean, pers. comm. 2003*; sample FRT 35) were analysed.
- from Parţa, 24 potsherds, three net weights, an altar foot, and a “black magic tool” (F. *Draşovean, pers. comm. 2003*; sample PRT15) were studied.

In this paper I will only consider the pottery and the cult objects.

Discussion

Raw material sources and temper

The clay sources exploited for pottery production at these SC sites are quite varied, although most of the objects analysed were made from raw materials that are non-micritic and micaceous (Fig. 2), and except at Dudeştii Vechi and Parţa, humic (Table 3). Raw materials that were utilised less frequently included more micaceous clays, or clays rich in iron oxides and clay pellets, or containing fragments of polycrystalline limestone and naturally-occurring shells. Despite the overwhelming preference for non-micritic clays, in one case a slightly micritic source was used (at Parţa) (Tables 3 and 4).

Three main types of temper were used in pottery production at Starčevo-Criş sites in Banat (Table 4). The most common is organic matter, typically wheat and barley chaff. Less frequently felspathic sand, composed of quartz, feldspar, and muscovite) was used, and occasionally pots were tempered with both sand and organics. In some cases, the choice of temper seems not to be strictly related to the choice of raw material (e.g. pots at Dudeştii Vechi), and in some cases it appears that the clay was not tempered at all, evidently because the clay was regarded as perfectly suitable for pottery production.

Globular vessels

This was easily the most common vessel form sampled, with 54 sherds analysed, representing all sites except Dudeştii Vechi, where this form does not occur (as the site is later than the other four). Globular vessels were manufactured from all the major raw material types identified

in Banat, other than the non-micritic clay with abundant thick lamellae of micas, which occurs only at Dudeștii Vechi. These vessels were tempered with organic materials, or organics and sand. In only one case there was no artificial addition of inclusions¹.

Short-necked globular vessels (6 samples from 3 sites) were produced using two of the major raw material types and two of the other types. All six samples were tempered with vegetal matter only.

Open bowls

The open bowls (9 samples from 3 sites) were manufactured using the two major types of raw material at Foeni Gaz, Fratelia and Dudeștii Vechi, and in one case another type of source was utilised. They were mainly tempered with vegetal matter, but a combination of sand and organic temper was also used, and in one case the sample was not tempered².

Oval-shaped pots

The oval-shaped pots (13 samples from 2 sites) were manufactured using both the micaceous and very micaceous clay sources at Dudeștii Vechi, and other raw materials such as the non-micritic clay with polycrystalline limestone and shell fragments at Parța. These vessels were mainly tempered with organic matter only, but in a few cases they also include both sand and vegetal temper, sand temper only, and in two cases no added temper at all.

Flasks

This form is scarcely represented in the samples obtained from sites in Banat. The five samples, from three sites, were made from both the major sources of raw material. All but one was tempered with organics only.

Pedestalled vessels

The three pedestalled pots (from 3 sites) sampled were made using a variety of clay sources and tempers: one of the major raw materials tempered with organics and sand (Dudeștii Vechi), a source rich in clay pellets,

tempered with vegetal matter (Fratelia), and one containing limestone and shell fragments, with no artificial addition of inclusions (Parța).

Conical pots

Conical vessels (5 samples from 3 sites) were mainly made from non-micritic and micaceous sources, tempered with organic matter only or with organics and sand. They were also made using other types of raw material, such as humic and very micaceous clay, tempered with organics.

Carinated vessels

Carinated pots are scarcely represented in the Banat sampling (2 samples from 2 sites). These pots were manufactured using both major sources; both were tempered with vegetal matter only.

Straight deep pots

Deep vessels with straight walls (4 samples from 2 sites) were manufactured from either one of the major sources (humic, non-micritic, micaceous), or with a non humic and very micaceous raw material. In either case they were heavily tempered with vegetal matter.

Indeterminate potsherds

Unfortunately for this type of study, many potsherds analysed were too small to be attributed to a clear typological form. This group of samples includes examples from most of the raw material sources identified, and with or without organic temper. Most of these sherds (25 out of 31) do not show a particular surface treatment, although some of them have impressed motifs. Only five sherds are red-slipped, and one has a polished surface.

Cult objects

Cult objects (6 samples from 5 sites) were mainly produced from less common raw material types. Only an altar foot from Parța (sample PRT26) was made of clay with a non-micritic, micaceous matrix with limestone and

shell fragments naturally present in the fabric, tempered with both sand and organic matter, which was also used to make globular vessels, a pedestalled pot, and an oval vase. The other cult objects analysed do not show a consistent choice of raw material. A “black magic tool” from Parța (sample PRT15) was manufactured using a slightly micritic paste with abundant fragments of polycrystalline limestone and occasional shell fragments, and no temper. Another “black magic tool” (sample FRT35) analysed, from Fratelia, was manufactured with very different technique and material to that of Parța: the potter used a non-micritic and very micaceous clay, heavily tempered with a felspathic sand, rich in micas with thick lamellae.

A bull’s head figurine (sample FNS21) from Foeni-Sălaș was manufactured using micaceous and non-micritic clay without temper. The clay used was similar to those exploited for pottery production at the same site, but not identical: it was less humic and richer in clay pellets than that used for the main fabric group (G1, *Spataro M., 2000, 31*) and less micaceous and silty from that used for the second group (G2, *Spataro M., 2005, 34-35*).

A second altar foot (sample FGZ28) from Foeni Gaz was analysed. It was not manufactured from any of the major clay groups: its fabric has a non-micritic, micaceous matrix, with some rounded polycrystalline limestone and shell fragments, which is tempered with vegetal matter. It also shows a red slip. It was made using a similar raw material to that used for the major group of vessels at Foeni Gaz, but the latter does not contain rounded fragments of polycrystalline limestone. On the other hand, shell fragments are not typical of this altar foot only, but they are also present in the raw material exploited for a large globular vessel (sample FGZ18) from the same site (*Spataro M., 2003*). Another altar foot, from Dudeștii Vechi, is made of one of the major clay sources, non-micritic and micaceous, tempered with organic matter, and it can be grouped with an open bowl with red painted surfaces (sample DDV8).

Conclusions

Although the geology of the areas surrounding the sites shows strong similarities, the pottery production from each site has its own characteristics. In the choice of raw materials there is a clear preference towards non-micritic and micaceous clays which were tempered with abundant organic matter.

Nevertheless, in most cases it is possible to suggest local production of the pottery, on the basis of analyses of the soil samples collected in the proximity of each site and their comparison with the fabrics of the ceramics, and of comparisons between the materials from neighbouring sites (e.g. Foeni Gaz and Foeni-Sălaș, *Spataro M.*, 2005, 40-41). Though the geology is similar to that of the other sites considered here, the potters at Dudeștii Vechi used slightly different techniques in pottery production, using similar raw materials but tempered with sand richer in coarse grains of quartz and mica, and sometimes containing small rock fragments.

What is apparent from the above discussion is that although various raw materials and techniques were employed in pottery production, it is difficult to detect any correlation between technology and typology. Only the ritual objects were not apparently made from the most common raw material sources, although there are too few samples (6 ritual objects) to be certain that any clay source was used exclusively to make cult objects. Although some of the fabrics of the cult objects analysed (e.g. at Foeni Gaz and Parța) contain shell fragments or polycrystalline limestone, materials which are less common in the fabrics of other artefact types, in at least one case, at Dudeștii Vechi, the clay source used to make an altar foot was also used to make a red-slipped open bowl. Similarly, the clay used to make the altar foot at Parța was also used to make three types of vessels.

From these results, it appears that early Neolithic potters in Banat did not select their raw materials with a mind to the type of clay object they intended to create. Nor can it be shown that there is any correlation between surface treatment and clay source, or between clay source and firing temperature. This does not mean that pottery production was simply a domestic craft, with raw materials selected at random, based on what was most easily obtained. Skilled potters could evidently shape all the vessel types from the same raw materials, following a common formula (*Spataro M.*, 2003; 2005, in press). It seems unlikely, however, that any vessel type was not manufactured locally; red-slipped open bowls, for example, were made using the same sources as the most ordinary vessels, which should also be regarded as imports if the monochrome bowls are not produced locally.

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NOTES

1. Sample FGZ12.
2. Sample FGZ17.

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Symbols represent the number and typological attribution of sherds sampled from each site and in each fabric group, as follows:

surface treatment	plain or impressed	red- slipped	polished
globular vessel			
short-necked globular vessel			
open bowl			
oval-shaped pot			
flask			
pedestalled vessel			
conical pot			
carinated vessel			
straight deep pot			
sherd indeterminate			
ritual object			

Table 4: Early Neolithic vessels in Banat: summary of the shapes versus fabrics.

raw material type											
non-micritic, micaceous	FRT ¹ PRT ³	PRT ¹	DDV ^{1,3} FRT ⁰	DDV ^{1,3} PRT ¹	DDV ¹ PRT ¹	DDV ³	DDV ¹ PRT ^{1,3}	PRT ¹		DDV ¹ PRT ¹ FGZ ¹	DDV ¹
humic, non-micritic, micaceous	FRT ¹ FNS ¹ FGZ ^{0,1}	FNS ¹	FRT ¹ FGZ ¹		FRT ^{0,1}			FNS ¹	FRT ¹ FNS ¹	FRT ¹ FNS ¹ FGZ ¹	
non-micritic, more micaceous				DDV ^{0,1,3}							
non-micritic, very micaceous	FRT ^{0,1}			DDV ⁰					FRT ¹		
non-micritic, micaceous iron-rich, abundant clay pellets	FRT ¹ PRT ¹					FRT ¹				PRT ¹	
non-micritic, micaceous, limestone and shell fragments	PRT ¹			PRT ¹		PRT ¹				PRT ¹ FNS ⁰ FGZ ⁰	PRT ³
other raw material types	FRT ¹ FNS ¹ _{G2}	FRT ¹ FNS ¹ _{G2}	FGZ ⁰ _{G3}	DDV ²			FNS ¹ _{G2}			DDV ¹	FRT ² PRT ⁰ FNS ⁰ _G FGZ ¹ _G 9
number analysed	54	6	9	13	5	3	5	2	4	31	6

Legend: see caption Table 3.

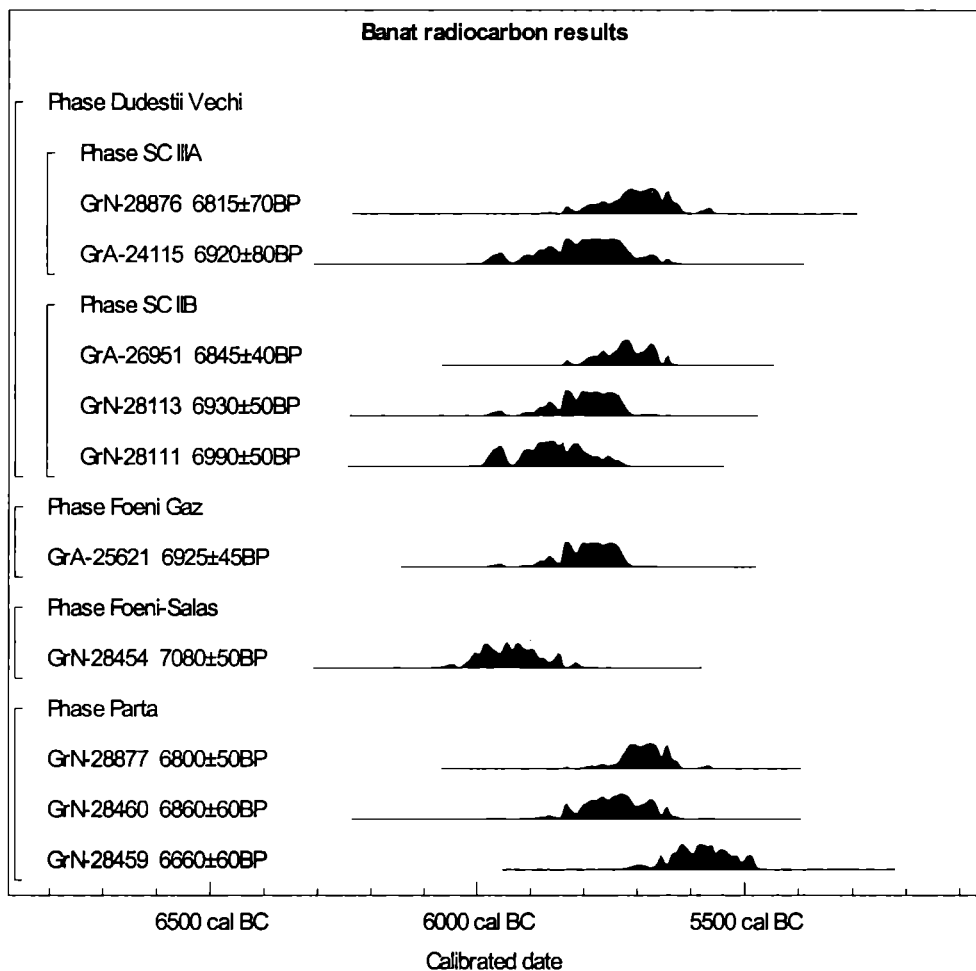


Fig. 1: Banat sites - calibration of the radiocarbon dates.

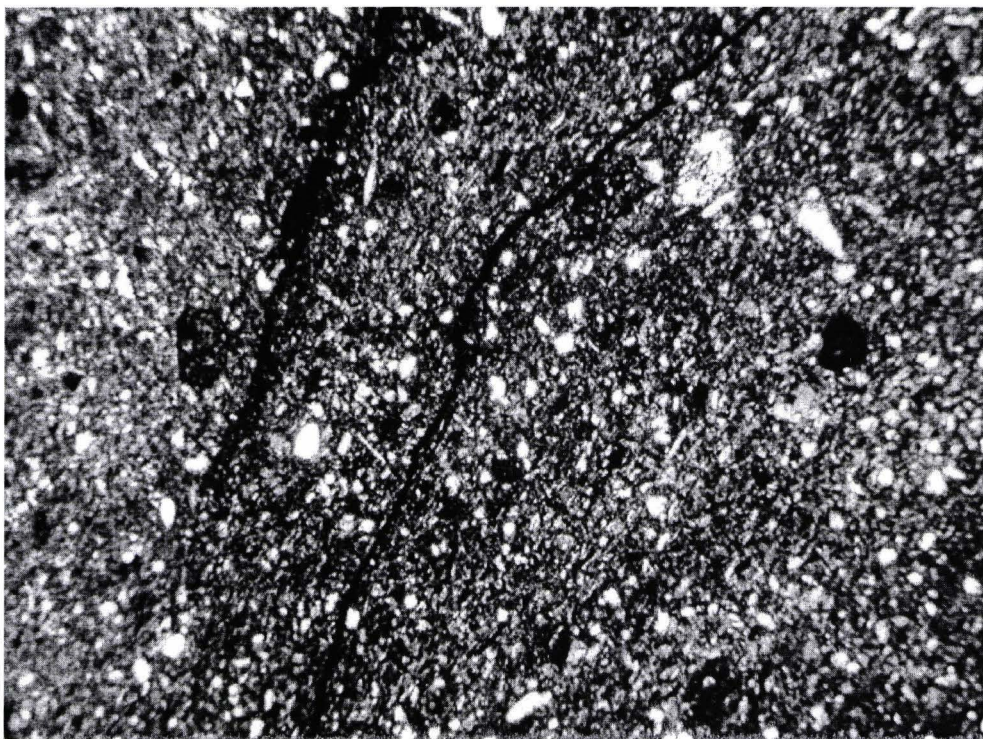


Fig. 2: Fratelia - Photomicrograph of a thin section of sample FRT2 showing a non-micritic and micaceous matrix with abundant fine and well-sorted quartz sand, and organic temper (voids) (N+, 40X: photograph by M. Spataro).

REPRESENTATION OF DANCE IN THE FIGURAL ART OF THE EARLY NEOLITHIC KÖRÖS CULTURE

János Makkay

Keywords: Hungary, Early Neolithic, Körös Culture, figural plastic art

In writing an article like this, one is struck by the enormous number of figurines and reliefs that occur in different Neolithic cultures of the Danubian area i.e. in the material of the Körös-Starčevo, Karanovo, Vinča, Linear Pottery, Cucuteni, Gumelnița and related cultures. Also by the way these figurines and reliefs might represent locally important aspects of earthly persons as well as supernatural beings, among others goddesses of fertility or gods whose duty was to protect the home. During the Neolithic, the rather vague eternal spirits (of clouds, rocks, trees, hunted animals, dead, etc.; venerated in the Upper Palaeolithic in all probability) became detached from their temporal – mostly naturalistic – representations, and take on more abstract associations. Thus we commonly find (at least in the early Neolithic Körös culture) the steatopygous representations of women, very probably a goddess of fertility, fecundity and childbirth, and very rarely her paredros (παρεδρος, son-consort) or male equivalent (attendant, assessor): schematic figurines of mostly old men (*Makkay J.*, 1993, 73, and fig. 3,1-3; *Makkay J., Starnini E.*, forthcoming, fig. 27, 1-6, fig. 28, 2-4, and fig. 29, 2-3). Curiously enough, these male statuettes are complete (unbroken) pieces while unbroken female figurines are extremely rare.¹

The idea of an original Fertility or Mother Goddess in the Neolithic is surrounded by an intense controversy. Instead of entering the debate on the nature of female divinity (or divinities?²) in ancient Carpathian and Balcanic societies, this paper is intended to shed light on an aspect, often neglected when studying ancient clay images of the female. Recent years, however, created a renewed interest in the ritual and symbolic world of Neolithic representations. My primary material comes from (I hope) mostly careful excavations, but it often is of fragile character.

In his bulky volume, Y. Garfinkel has explored his remarkable thesis that human statuettes (furthermore their painted and relief representations) virtually always appear to be dancing (*Garfinkel Y., 2003*). These painted, modeled, carved or incised representations occur in assemblages locatable in the Near East, Anatolia, the Levant and Egypt, and also Southeastern Europe between the earliest Neolithic around 9000 (Pe-Pottery Neolithic B) and 3000 B.C. Although some (or even most part) of our Körös figures are far from convincing as dancers, others strengthens his thesis. I fully agree with his main conclusions with a relatively minor modification: representation of dancing was not the most important and widespread representational subject throughout Neolithic Eastern and Central Europe. Catalogue entries of Garfinkel list several pieces of the Neolithic of Southeast Europe (including cultures of Greece, Bulgaria, the former Yugoslavia, Romania and the Dniester Basin), Hungary, Slovakia and the Czech Republik (*Garfinkel I.Y., 2003, 205-231*). Most of them date to the Late Neolithic, others belong to different phases of the Linear Pottery cultures while a few pieces are characteristic find of the Early Neolithic Körös culture.³ Two more pieces date to different developing periods of the Alföld Linear pottery (one to its later group, the Bükk culture)⁴ and, finally, the relief fragment of Villánykövesd is a rare find of the Late Neolithic Lengyel culture, and its site lies in Transdanubia.⁵ This latter piece was once published by the author of this article in a detailed account, now forgotten.⁶

According to Garfinkel, this European group (of Early, Middle and Late Neolithic pieces) represents the northwestern extremes of the distribution area of the dancing motif. While dancing figures of the relevant types (i.e. relief-modelled and incised representations) were a common motif on pottery vessels, most of them from Southeast Europe – as seen from a technical point of view – were decorated with plastic applications. Only a few items were incised, and still fewer painted.⁷ Usually broken sherds are reported with only one applied or rarely incised figure. However, in some cases complete vessels were found – or reconstructed – bearing two or more figurines on their outer walls.⁸ Female figures seen on these scenes, however, do not represent dancers, while other anthropomorphic reliefs do⁹. Remarkably, most part of the applied dancing figures of the Körös culture was found on the well-excavated Körös site of Hódmezővásárhely-Kotacpart, Vata farm.

Painted representations are still completely unknown in Körös-assemblages, while the singular painted and applied piece of the Late Neolithic Tisza culture from Szegvár-Tűzköves¹⁰ (Fig. 2.3) has its further parallels with applied reliefs.¹¹ Amongst the fragments with incised decoration, the most important piece was found on the well-known site of Hódmezővásárhely-Kökénydomb, published by J. Banner already in 1930.¹² The sherd is a fragment of a thick-walled vessel of unknown shape, and its decoration shows a quadrangular platform on which two incised human figures of obviously different sex can be seen: according to their leg position the woman and the man were represented in couples dance (Fig. 2.1), which is the rarest type of dance in the archaeological inventory.¹³ Another possible interpretation of this scene may be that these two interlocking figures perform the sexual act: lead and clay plaques from archaic Assur in Mesopotamia represent couples standing face to face performing coitus. In some cases cylinder seals show scenes where participants can be seen on the top of a rectangular support, which seems to represent mud brick¹⁴. The quite common occurrence of dancing figures on two large sites of the Tisza culture (Hódmezővásárhely-Kökénydomb and Szegvár-Tűzköves: Fig. 2.4-5 from the Kökénydomb site) underlines the assumption of Y. Garfinkel: both in the Near East and Southeast Europe, the dancing motif predominated in a period in which large village communities were developing. (Figures of the Körös-culture apparently are the exception that proves the rule.)

At the same time, dancing should not be associated with economic activity or propaganda but rather should represent mythological details or comradeship between members of society at times of leisure in a relaxed atmosphere. It appears that the motif answering such criteria is that of the communal banquet, in which people are eating and drinking together. Details of the well known Kronia or Saturnalia of the Greco-Roman world would perfectly agree to similar conditions in the Late Neolithic, described – for example – in Lucian's Saturnalia.¹⁵ Dancing (also unclothed) and the use of masks was an important part of these rural harvesting rituals and following festivities.

Two dancing scenes from two Körös settlements are presented in this short paper. Both are applied plastic decoration on pottery vessels. Chronologically, they are related to their parallels discovered in Halafian and Samarran assemblages in Northern Mesopotamia, and also to their

peers coming from Early Neolithic sites of Greece, Bulgaria and the Starčevo culture (Fig. 1.1-2 from Sofia-Slatina, Bulgaria, and Fig. 1.3 from the Argissa Magula, Thessaly¹⁶).

During excavations, conducted on sites of the Körös culture in the Körös valley three decades ago, two broken fragments of very large containers came to light. The shape of the vessels has remained unknown. According to Y. Garfinkel, the vessels chosen for decoration with dancing scenes are usually small or medium sized: cups, small bowls, pedestal bowls and medium-sized jars. On the other hand, in Southeast Europe most of the dancing scenes of the Körös culture were found on large pithoi. These containers may have been used to serve (or only store) food to the entire community participating in the ceremonies (for instance in the annual cult and ritual of the Kronia).¹⁷

One piece was discovered at the site 119 of Endrőd in trench 33/1988, in a depth of 160-200 cm, coming from the deepest part of rubbish pit 12 (Fig. 1.5). It is a wall fragment of a very large storage jar, with part of a female figurine in high relief corresponding to the buttocks and legs. This sherd was found in Pit 12 together with one complete female steatopygous statuette, one small face vessel, and another sherd of vessel with an applied human figurine. They were recovered from a burnt area very close to the western end of sacrificial Pit A5. Unfortunately, it was not easy to determine whether they were belonging to the fill of the sacrificial pit or to the burnt layer of the fill of Pit 12, but their almost complete condition suggests a sort of ritual deposition (*Makkay J.*, forthcoming, the description of House 2 in trenches 25-33. *Makkay J.*, *Starnini E.*, forthcoming, Fig. 40). Another interpretation (if the piece would be turned upside down) suggests that two women were schematically represented in the scene when dancing. If this latter interpretation is correct, and the scene was depicted around the circumference of the jar, this type of endless motif created a circle of dancing figures, representing dancing women.

Another fragmented piece was found at the site Endrőd 39, in trench XIII/1977 (belonging to House 1), with an applied plastic decoration (*Makkay J.*, *Starnini E.*, forthcoming, Fig. 47). It is not possible to establish if the decoration was running around the neck (or the upper part of the shoulder) of the vessel or it was placed only on one part. I would support the first possibility. The motif represents a row of oblique, intersecting ribbons, which can be interpreted schematic and stylized representations of

human bodies and legs. This piece has no parallel amongst the presently known Körös or Starčevo pottery assemblages. A continuous row of at least three (or four?) – partly preserved – human figures is represented frontally, touching (or crossing) one another with their legs, thus creating a dynamic representation of movement. The figures are not identical to one another, depicting the upper part of the body in a very schematic style and the lower part of the body in a linear style. The legs end in a pointed element which may represent the feet. One (or two?) figure has a hanging curved right arm (Fig. 1.4). The complete scene probably consisted of a chain of many similar figures in a circle. No other scenes depicting interaction between people have been reported from Körös assemblages.

It is important to remark that these two figures show the arrangement of the dancing figures around the circumference of round objects (i.e. vessels). This type of endless motif creates a circle of dancing figures which may correspond to an identical appearance of dancing persons in a scene. In the original scene, however, dancers had been arranged around the circumference, and mostly all face the center, but occasionally also outwards. The circle could have been organized around sacred items, such as divine symbols, holy trees, or any other cultic objects, and such a central point might have also been a central fire, an offering, an altar, etc. I agree with Garfinkel's conclusion that these dancing scenes of the Körös culture reflect cultic and artistic ideology of the given society (*Garfinkel Y., 2003, 87-89*).

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NOTES

1. The eight körös sites (more than 20 assemblages of partly different chronology) – excavated in the körös valley – contain only one two or three completely preserved female clay figurines as compared to hundreds of fragmentary pieces or simple fragments: see *makkay forthcoming*, fig. 106.3. *Makkay J., Starnini E., forthcoming*, figs. 1-26, fig. 4.1-2, and also fig. 26.1.
2. see the extremely different artistic executions of different aspects of idealized persons or heavenly female spirits (goddesses?), as for example *the siren-like plaster figure* from endröd, site 119 (*makkay forthcoming*, fig. 95.1. – *Makkay – Starnini forthcoming*, fig. 62), *the steatopygous statuettes* of common type, and finally the typologically very different and curious *flat figurines* (*Makkay – Starnini forthcoming*, fig. 30. 1-2).
3. *Garfinkel Y., 2003*, Fig. 10.4. and p. 228 (Szajol-Felsőföld); no. 96 (p. 213. And fig. 10.10.c: Sarvaš); fig. 10.12.c and 10.14.c, and p. 227 (Hódmezővásárhely-Kotacpart); pp. 122 and 124, and fig. 10.18.d (correctly Nagykörü); p. 230, and fig. 10.18.f (Szentcsanakpart).
4. *Garfinkel Y., 2003*, p. 227, and fig. 10.14. E (Tiszavasvári-Paptelekhát); p. 228 and fig. 10.13.c (borsod).
5. *Garfinkel Y., 2003*, pp. 227-228 and fig. 10.11.a (Villánykövesd).
6. *Makkay J., 1968*, pp. 39-62 (the late neolithic Lengyel Culture). – no wonder that Garfinkel located the site in northeastern Hungary. In fact, the site lies in the southernmost part of this country, near the hungarian-croatian border on the left bank of the Drava river. Interpretations of Garfinkel occasionally rest on incorrect assumptions of M. Gimbutas as for example in the case of the Borsod piece (mentioned in note 2).
7. see the piece from thessaly and from argissa magula: *Garfinkel Y., 2003*, Fig. 10.15.a and fig. 10.14.a. For a summary see *Garfinkel Y., 2003*, pp. 205-206. For further painted figures see Nikolov 2004. Abb. 2.2-3. And fig. 3.1. And 4.
8. *Trogmayer O., Koncz M., Paluch T., 2005*, Nos. 42-45.
9. *Trogmayer O., Koncz M., Paluch T., 2005*, Nos. 47-48. And 50.
10. *Garfinkel Y., 2003*, Fig. 10.15.b, and also *Trogmayer O., Koncz M., Paluch T., 2005*, 80, No. 160.
11. *Trogmayer O., Koncz M., Paluch T., 2005*, Nos. 159 and 16.
12. *Trogmayer O., Koncz M., Paluch T., 2005*, 92, No. 190 with reference to the article of J. Banner in 1930. According to Trogmayer et al., the design can perhaps be interpreted as a schematic human portrayal.
13. for its possible parallel see an incised human – male? – figure with raised hands – also from the Tisza culture (fig. 2.2; diam. 10.4 cm: dancing? Male figurine on the lower wall of a flat lid): Raczky P., 1990, 81, fig. 104. – unfortunately, Y. Garfinkel was not aware of the existence of this piece. For dancing couples see *Garfinkel Y., 2003*, Fig. 2.17., esp. No. 3.
14. *Pinnock F., 1995*, 25., and fig. 5.
15. *Makkay J., 2005*, 111-113.
16. *Nikolov V., 2004*. Abb. 2.2-3 (Sofia-Slatina), abb. 3.1 (the Argissa Magula, Thessaly).
17. *Garfinkel Y., 2003*, 91-92.

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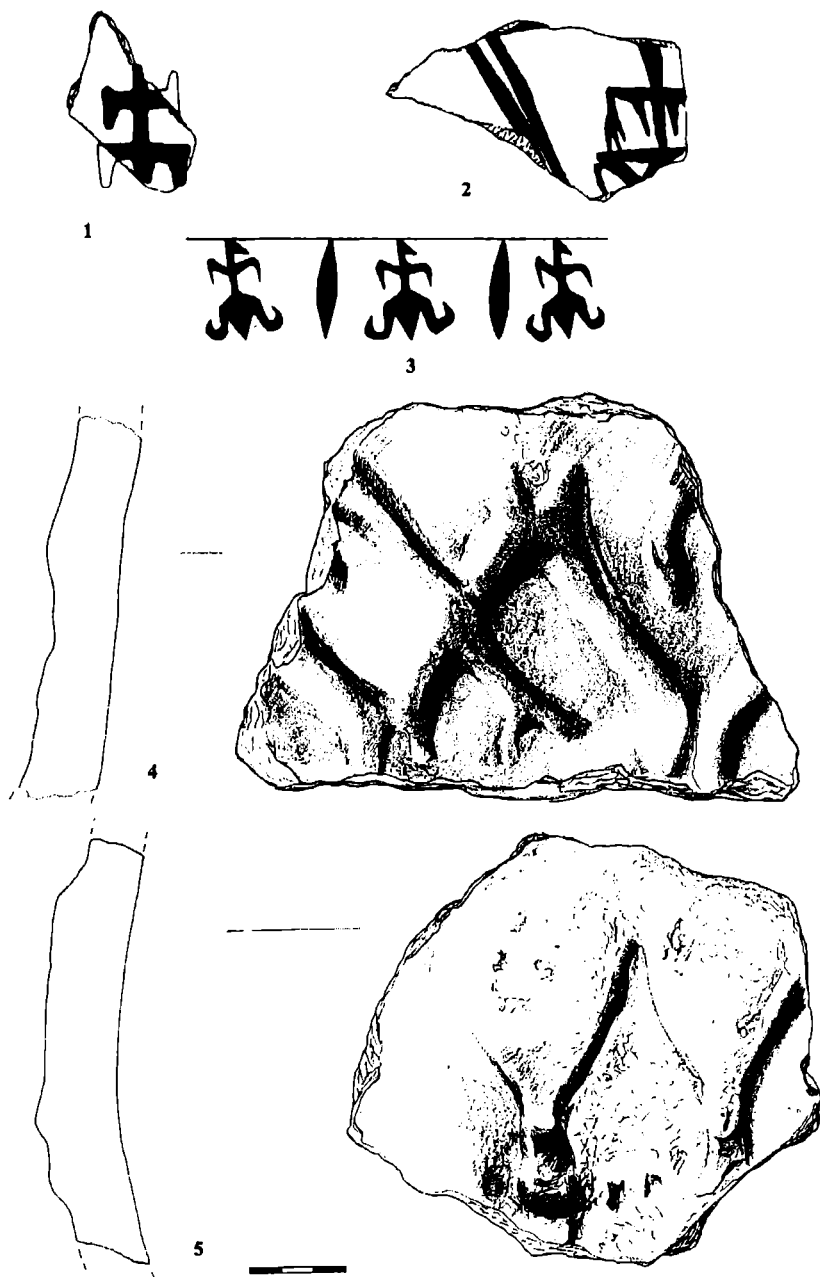


Fig. 1

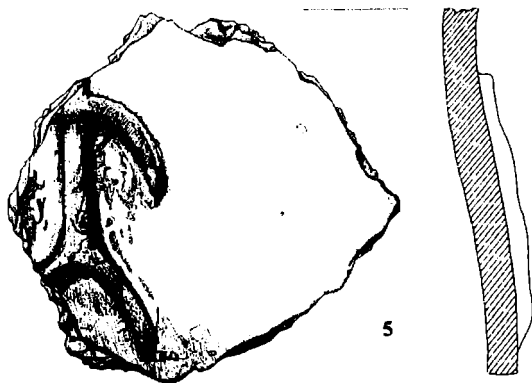
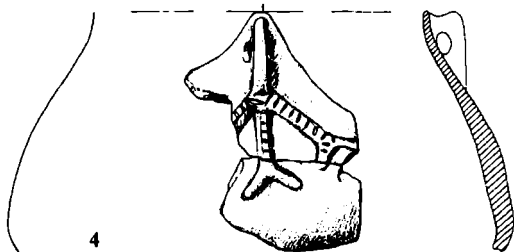
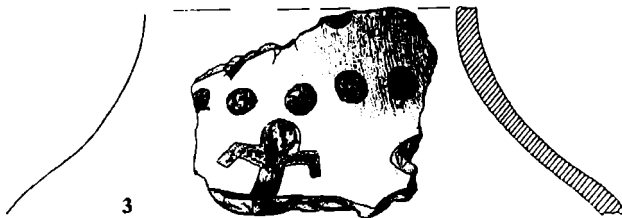
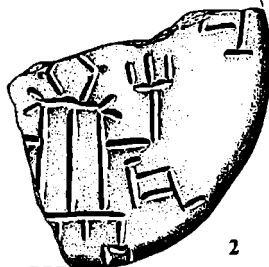
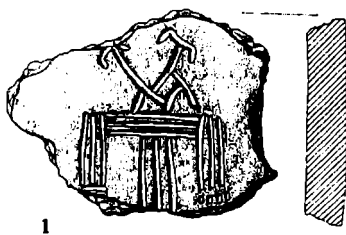


Fig. 2

MARINE GOODS IN EUROPEAN PREHISTORY: A NEW SHELL IN OLD COLLECTION*

Boban Tripković

Keywords: *Late Neolithic, Vinča, marine shell collection*

Abstract

The exchange of marine goods in the interior of the European continent is traditionally equated with the exchange of *Spondylus* shell items. In this long-lasting exchange network, significant role of any other mollusks has not been identified so far. Contrary to this evidence, in the Neolithic settlements of the Aegean and the Adriatic regions, where, it is believed, *Spondylus* had been imported from, many other shells were used for manufacturing adornment. Is it possible that shell diversity in the Balkan coastal area is somehow reflected on the interior of the continent? In this paper, credibility of this question is assessed through a study of shell-made items from the site of Vinča in the vicinity of Belgrade, Serbia.

Introduction

The exchange of marine goods in the interior of the European continent is traditionally equated with the exchange of *Spondylus* shell items. *Spondylus* bracelets, beads, buttons, pendants and belt buckles were items of exchange for the Neolithic and Copper Age communities for more than 2000 years (Clark J.G.D., 1952; Vencl S., 1959; Willms C., 1985; Müller J., 1997; Todorova H., 1995; Todorova H., 1995; Séfériadès M., L., 1995a; Séfériadès M., L., 1995b; Séfériadès M., L., 1995b). In this long-lasting exchange network, significant role of any other mollusks has not been identified so far. Contrary to this evidence, in the Neolithic settlements of the Aegean and the Adriatic regions, where, it is believed, *Spondylus* had been imported from, many other shells were used for manufacturing adornment (Karali L., 1999; Reese D. S. 1987; Nikolaidou M., 2003; Shackleton N., J., 2003; Miller M., 1996). Then, why did *Spondylus* items only had

such continental significance during the Neolithic and Copper Age? Is it possible that shell diversity in the Balkan coastal area is somehow reflected on the interior of the continent? In this paper, credibility of this question is assessed through a study of shell-made items from the site of Vinča in the vicinity of Belgrade, Serbia. Moreover, it is demonstrated that a re-study of existing shell collections and especially *Spondylus* assemblages represents an essential analytical route for understanding Prehistoric trade and routes of exotic goods.

Marine collection at the settlement of Vinča

Vinča is a tell site, situated on the right coast of the Danube, 14 km downstream from Belgrade. In its cultural deposit, over 9 m thick, layers dating from the Neolithic to the Late Middle Age were discovered (Srejšović *et al.*, 1984). Neolithic settlement lasted from about 5,500 to 4,400 cal BC (Gläser R., 1996), covering an area of 6 to 10 ha. Vinča has been excavated in the course of three research phases (1908-1934; 1978-1986; 1998-2006); it remains the most extensively investigated Late Neolithic settlement in the central Balkans to date (Srejšović D., 1988; Tasić N., N., 2005). The settlement testifies to the presence of sedentary community with stable architecture, elaborate material and symbolic practice and well-organized exchange activities (Vasić M., 1932; Vasić M., 1936a; Vasić M., 1936b; Vasić M., 1936c; Stalio B., 1968, 84-86; Chapman J., 1981). A significant quantity of raw materials and objects foreign to the region, including obsidian, marine shells as well as ceramic inventory belonging to the surrounding cultures, suggest intercultural contacts of the Vinča community thus indicating the existence of organized and socially stimulated exchange networks (Glišić J., 1968, 33; Garašanin M., 1979; Radovanović I., *et al.*, 1984; Kaczanowska M., Kozłowski J.K., Pawlikowski M., 1984; Chapman J., 1981; Tripković B., 2004; Dimitrijević V., Tripković B., 2003; Dimitrijević V., Tripković B., 2006).

Findings of marine origin constitute a significant part of the "exotic collection". Bracelets and other shell-made ornaments were found in all Neolithic strata of the Vinča settlement. Besides the fragments of nine bracelets made known at the beginning of exploration (Vassits M., 1910), the large majority of these finds were published only recently (Dimitrijević V., Tripković B., 2003; Dimitrijević V., Tripković B., 2006). 307 items were recorded, mostly bracelet fragments and, to a lesser extent, beads and

pendants. Next to the ornaments made of *Spondylus* shell (169), a large part of the collection consists of the items made of *Glycymeris* shell (94), while the smallest part of the collection are three fossilized *Limnocardium* shells (Fig. 1).. For 41 items it was not possible to determine the exact shell they were made of, but most probably they were made of *Spondylus* or *Glycymeris* shells (Dimitrijević V., Tripković B., 2006).

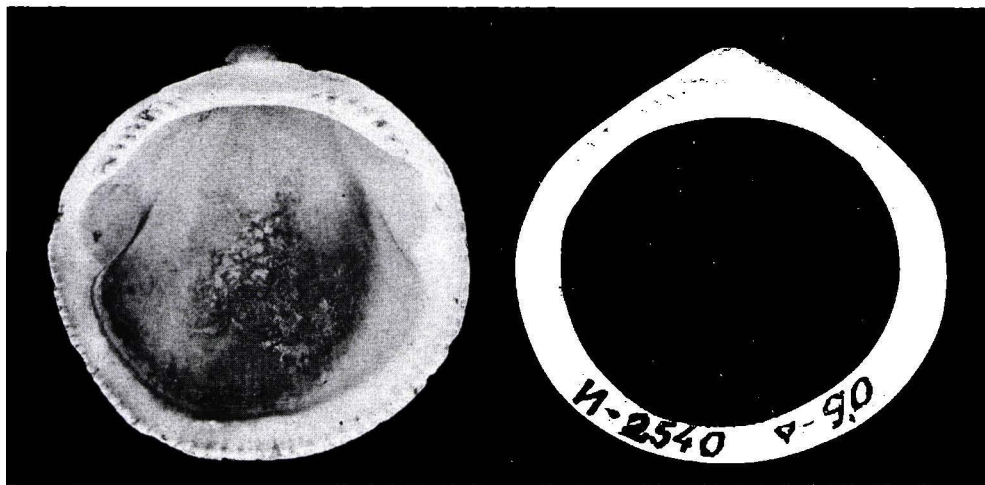


Fig. 1: *Glycymeris* shell and Vinča bracelet/annulet of the same shell

High frequency of *Glycymeris* shells in Vinča poses a surprise since so far there has been no evidence of its inclusion in the assumed extensive Neolithic exchange networks in the central Balkans. The only report of *Glycymeris* is 22 years old and refers to two bracelets from Vinča that were identified previously as *Pectunculus* shells, which is an old name for *Glycymeris* species (Babović Lj., 1984, 127, catalogue No. 235, 237). However, at the time of identification these were designated as fossil findings. Up until now, those were the only *Glycymeris* items from the central Balkans that have been published. On the other hand, during the study of the collection, it has been realized that it is sometimes difficult to distinguish *Spondylus* from *Glycymeris*. Two shells, generally very dissimilar in the untreated form, lose their characteristic, natural attributes in the process of artifact production, which makes an exact identification of shell genera difficult. It has been suggested more than once that numerous *Spondylus*

assemblages throughout the European continent probably also comprise a large number of *Glycymeris* items (Shackleton N., J., 2003, 364; Todorova H., 2002; Dimitrijević V., Tripković B., 2006).

Equally important observation is that the procurement of *Spondylus* and *Glycymeris* items at Vinča is related to diachronic changes. Finds from Miloje Vasić's excavation campaigns (1908-1934 encompassing the complete Neolithic sequence) indicate that the largest amount of *Glycymeris* items is present in the earlier settlement strata (Fig. 2). In the later part of the sequence, *Glycymeris* declines in number. In contrast, *Spondylus* is particularly numerous in the layers higher than the fourth meter, which again corresponds well with the disappearance of *Glycymeris* items. This diachronic relationship of the two shell genera has been confirmed in the course of 1978–2003 excavation campaigns, during which only later settlement strata were investigated. From the overall number of 72 uncovered items, only eight belong to *Glycymeris* shell (Dimitrijević V., Tripković B., 2006).

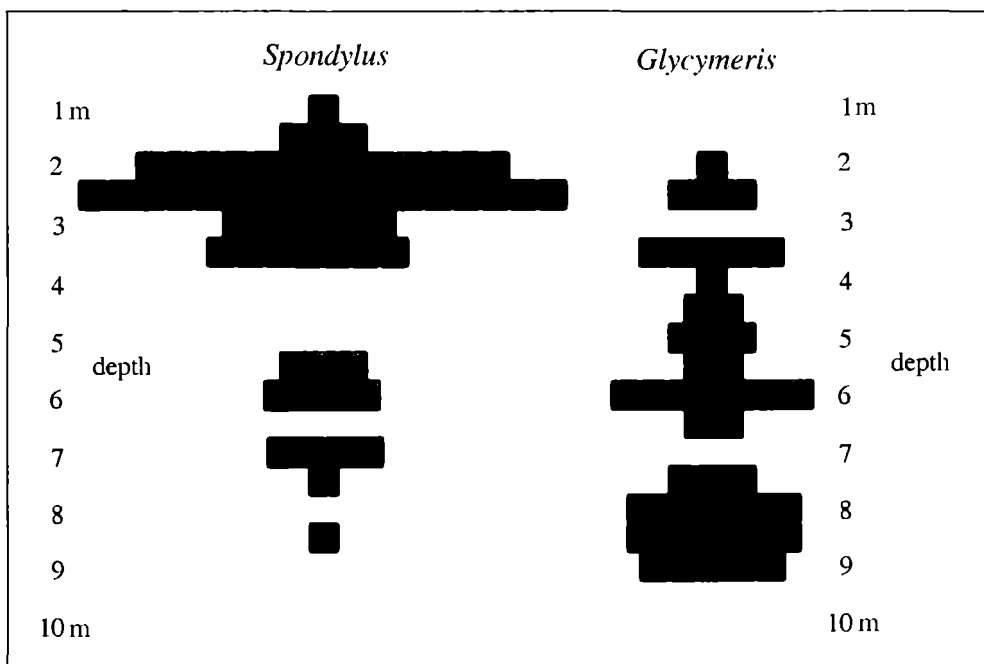


Fig. 2: *Spondylus* and *Glycymeris* items from 1908-1934 Vinča excavations distributed by depth (re-drawn by B. Tripković after Dimitrijević V., Tripković B., 2006, Fig. 5)

The third important observation concerns the type and nature of the manufactured items. Only bracelets were made of *Glycymeris* shell (with the exclusion of a pendant/button made of small valve), while beads and pendants in addition to bracelets were manufactured from *Spondylus* shell. The items were imported most probably in their finished form, but there are rare finds of shell valves, which indicate the import of untreated shells as well. A large number of items in the bracelet category could be relate to the taphonomy of their breakage as only one bracelet is complete, and several separate fragments originally might have come from the same item. There are secondary made perforations on many fragments, which clearly suggests that simple pendants and composite ornaments were locally produced from broken parts (Dimitrijević V., Tripković B., 2006). The fragmentation of bracelets at Vinča seems to relate to the settlement context of their deposition, whereas complete shell-made bracelets in the central Balkans are most frequently found in burial contexts such as the necropolis in Botoš (Milleker F., 1938, 113; Chapman J., 1981, 456, Table 19), as well as in the well-known ritual context in Tărtăria (Vlassa N., 1963; Vlassa N., 1976). The only complete bracelet from Vinča (made from *Glycymeris* shell) originates from the depth of 9.0 m and can not be related to a burial context (see Fig. 1).. However, it could be significant that the only Late Neolithic burial at Vinča was discovered at the depth of 8.75 m (Garašanin M., 1979, 159).

Three observed traits that characterize marine goods at Vinča (frequency of *Glycymeris* items, diachronic nature of changes related to *Spondylus* and *Glycymeris* finds and the typological differences among imported items) could represent a regional pattern due to few reasons. Firstly, the marine collection from Vinča is the largest one of that kind in the mid-Danube region. Other Vinča culture sites yielded much smaller number of items: 44 from Vršac-Potporanjska granica, 28 from Potporanj-Kremenjak, 14 from Vršac-At (Milleker F., 1938, 148) and 24 items from the Botoš necropolis (Milleker F., 1938, 113, 148; Chapman J., 1981, 455-456, Table 19). Besides these finds, only a few other shell-made items were published (Dimitrijević V., Tripković B., 2003; Chapman J., 1981; Willms C., 1985), including those from Tărtăria (Vlassa N., 1963), Mostonga (Karmanski S., 1977) and Parța (Resch F., 1995). Secondly, the Neolithic settlement at Vinča falls at the time when exchange of exotic goods, and especially *Spondylus*, was at its peak in the Danube basin (Tripković B., 2004; Chapman J., 1981, 77-83; Müller J., 1997; Todorova H., 2000). And, thirdly, the settlement is located

on the borderline between the Southeastern and Central European cultural zones. Existence of these zones, along with the differences in architecture and settlement layout, was also corroborated with the differences in type and appearance of shell-made items (Müller J., 1997).

Considering that it is the most representative site in the mid-Danube region, Vinča undoubtedly offers a regional perspective on the exchange of *Glycymeris* items. However, the real importance of this shell can be assessed only by re-studying of existing marine assemblages from Vinča culture sites (Fig. 4). The presence of *Glycymeris* shells throughout the region could tentatively be suggested on the basis of photographs of shell bracelets from the necropolis at Botoš (Petrović J., 1997, 33) and the settlement site of Kremenjak by Potporanj (Rašajski J., 2002, 29). It is interesting that both of these sites, the necropolis and the settlement, belong to early Vinča sequences and fall within the observed diachronic trends of *Spondylus* and *Glycymeris* shells at Vinča.

***Glycymeris* in European Prehistory: A perspective for comprehending shell exchange**

Utilization of items made of *Glycymeris* shell in the European Prehistory was identified mostly in the Mediterranean region (Reese D.S., 1987; Nikolaidou M., 2003; Light I., 2003). Bracelets were extensively exchanged in the Neolithic of the Iberian peninsula, especially in northeastern Spain (Harrison R. J., Orozco Köhler T., 2001, 108). These bracelets, however, were manufactured from fossilized shells which is not the case in other European regions. Items made of non-fossil *Glycymeris* shell have been reported mostly from the Aegean region (Karali L., 1999; Shackleton N., J., 2003; Nikolaidou M., 2003; Reese D.S., 1987, 121-124), and only recently from sites around the Black Sea (Todorova H., 2002; Avramova M., 2002). In the Aegean and mainland Greece, *Glycymeris* bracelets were discovered in Sitagroi, Servia, Nea Nikomedeia and Vasilika C-II (Nikolaidou M., 2003, 337-338; Karali L., 1999, 39, 58-59, Table 3; Reese D.S., 1987, 122). More frequent are simple pendants made of perforated valve; in larger number they were found in Sitagroi III, Dikili Tash, Dhimitra, Paradeisos, Knosos, Phaestos, Myrtos, while they also sporadically appear in Kitsos Cave, Saliagos, Ayio Gala, Anza and Troy (Nikolaidou M., 2003, 348; Reese D.S., 1987, 121-124; Karali

L., 1999, 39, 58-59, Table 3). The abundance of finds makes it possible to observe the relationship between items made of *Spondylus* and *Glycymeris*. Phases II and III of the Sitagroi settlement display dramatic change in the number of *Spondylus* and *Glycymeris* bracelets (Shackleton N., J., 2003, 361-362; Nikolaidou M., 2003, 338). Their ratio in phase II is 22:9, while in phase III that ratio is 117:5 for *Spondylus* (Nikolaidou M., 2003, 338). Important for understanding the dynamic of artifacts distribution in the interior of the continent is the fact that Sitagroi II is dated between 5200-4600 cal BC (Renfrew C., 2002, xxvii), which is the time of the most frequent *Glycymeris* occurrence at Vinča, and Sitagroi III between 4600-3500 cal BC (Renfrew C., 2002, xxvii), spanning the time of most frequent *Spondylus* occurrence at Vinča. It is therefore probable that diachronic trends in the utilization of *Spondylus* and *Glycymeris* bracelets in the Aegean and the central Balkans have the same cause.

Shell-made bracelets from the western coast of the Black Sea were mostly classified as *Spondylus* or *Spondylus/Glycymeris* category. The number of *Glycymeris* bracelets at the Durankulak necropolis appears to be considerable; 1505 *Spondylus/Glycymeris* items were discovered (Todorova H., 2002, 179), dating between 5250/5200(?)–4250/4150 cal BC (Bojadžiev J., 2002, 67). As for other sites in Bulgaria, a cache of 12 *Glycymeris* bracelets was discovered in Mirkovo settlement from the time of around 4200 BC (Krivodol-Salkuța III context), and another cache of 20 bracelets from an unknown location (Todorova H., 2002, 178-179). Considering the overall number of shell items in the Black Sea region (Willms C., 1985; Todorova H., 2000; Séfériadès M.L., 1995; Müller J., 1997), the quantity of *Glycymeris* bracelets cannot be compared with Vinča. It is worth noticing, however, that at the Durankulak necropolis, which spans almost the entire Vinča sequence, most of the identified *Glycymeris* bracelets come from the phases Hamangia III and Hamangia IV (Todorova H., 2002, 178), which date to the period between 4950/4900–4550/4500 BC (Bojadžiev J., 2002, 69); it means that the frequency of *Glycymeris* bracelets in the necropolis still corresponds with their appearance at the site of Vinča.

The area with the least identified *Glycymeris* shell is the eastern Adriatic coast. The most likely reason for this can be the fact that archaeomalacological analyses were generally lacking from the region until recently. In the hinterland of the Adriatic coast, in horizon X of Crvena Stijena site, a perforated *Pectunculus* sp. shell was discovered, as well as a

larger number of perforated valves of *Pectunculus Glycymeris* in horizon IX, and both belong to the Late Upper Paleolithic. These finds can be dated between 14,500 and 13,500 BP (Mihailović D., 1999).

So, where should one search for the origin of the Vinča *Glycymeris* finds? Out of the three mentioned regions, *Spondylus* and *Glycymeris* shells today are absent from the Black Sea only. Therefore, the traditional interpretations for the origin of numerous *Spondylus* artifacts most often suggest the Aegean and the Adriatic regions as the likely place of origin (Séfériadès M.L., 1995; Müller J., 1997); this is probably true for most of the *Glycymeris* bracelets too. *Glycymeris* bracelets and perforated valves of the same shell indeed appear on many sites in Greece from the Neolithic time, and the trends of their utilization match those in the central Balkans. Also, *Glycymeris* bracelets have been abundantly found at the archaeological sites on the west coast of the Black Sea, but they were not separately studied from *Spondylus* shell and the trends of their utilization are not known. Fragments of *Glycymeris* shell as half-finished products were found at Big Island next to the necropolis of Durankulak; it was suggested that they were collected and treated at this location (Todorova H., 2002, 178). Sandy sea bottoms in this area are also favorable for *Glycymeris* life cycle (Todorova H., 2002, 181), and these two facts are, for now, the only clues that the Black Sea region served as an alternative source of supply.

On the other hand, biotope of *Spondylus* and *Glycymeris* shells is irrelevant for understanding the nature of Vinča collection. They certainly did not reach the Danube basin through direct exchange with the Aegean and Black Sea communities. Alongside Vinča, shell items in the Vinča culture are largely found in the southeast Pannonia (Fig. 3). So far, there are only few finds distributed south of the Danube (Dimitrijević V., Tripković B., 2003, 58). Not only that southern settlements of the Vinča culture were not involved in the extensive network of *Spondylus* (and *Glycymeris*) exchange, they also yielded very small quantities of other exotic goods (Tripković B., 2004; Dimitrijević V., Tripković B., 2006, 12). Considering that the number of excavated sites is not small, it is unlikely that further excavations would significantly alter this pattern.

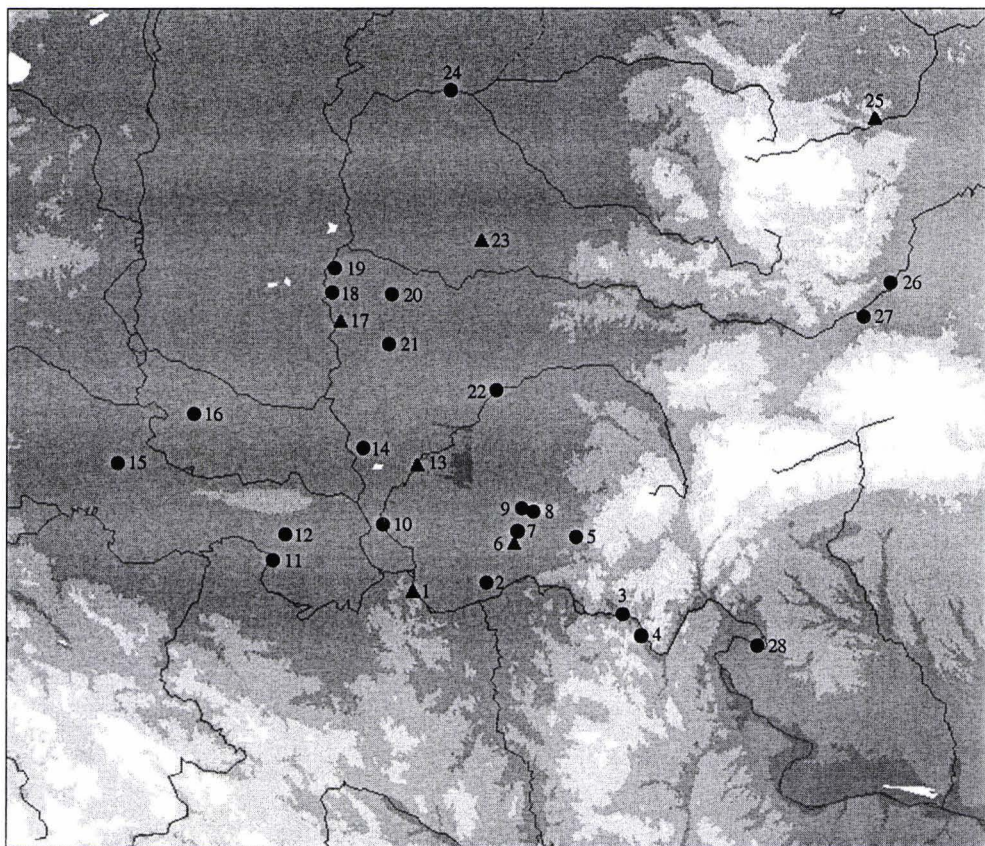


Fig. 3: *Spondylus* and *Glycymeris* distribution in the Neolithic of the Central Balkans and Southern Pannonia (after Dimitrijević V., Tripković B., 2003, 54, Fig. 3; Chapman J., 1981, 318-319, Fig. 105; Willms, 1985): ● - *Spondylus*, ▲ - *Glycymeris* items in *Spondylus* assemblages. *Starčevo* sites: 5 - Gura Baciului; 4 - Lepenski Vir; 12 - Ruma, Zlatara; 15 - Vinkovci, Tržnica; 19 - Srpski Krstur; 20 - Besenova Veche; 24 - Endröd 119. *Vinča* sites: 1 - Vinča; 2 - Gaj, Čolak; 3 - Ljubcova; 5 - Racasdia; 6 - Potporanj, Kremenjak; 7 - Vršac, Potporanjska Granica; 8 - Vršac, Kozluk; 9 - Vršac, At; 10 - Opovo; 11 - Gomolava; 13 - Botoš; 14 - Aradac; 16 - Odžaci, Mostonga; 18 - Novi Kneževac; 21 - Kikinda; 22 - Parta; 26 - Alba Iulia; 27 - Tartaria; 28 - Ostrovul Corbului. *Tisza/Vinča* sites: 17 - Čoka, Kremenjak. *Tisza* sites: 23 - Battonya-Parázstanya

Finally, it is important to mention that the Neolithic communities of the mid-Danube basin maintained long term contacts only with communities in the Carpathian basin and, occasionally, with the western Balkan communities. Those contacts were created and maintained in this

region since the Early Neolithic thus creating a cultural sphere with a specific cultural content. In the Early Neolithic, this cultural sphere includes the Starčevo-Kőrös-Criş in the northern Balkans and the Carpathian basin as well as the Starčevo-Impresso in the western Balkans (Garašanin M., 1979). In the Late Neolithic, there were contacts with the Szakálhát and the Tisza communities in the Pannonia and, occasionally, with Sopot-Lengyel communities in Croatia (Garašanin M., 1979, 198; Garašanin M., Garašanin D., 1957; Chapman J., 1981; Dimitrijević S., 1979, 298, 301). Circulation of exotic goods is a common feature of all mentioned cultures (Dimitrijević S., 1968; Dimitrijević S., 1969; Dimitrijević S., 1979, 291-292; Willms C., 1985; Biró K., 1988; Korek J., 1989; Greif T., 1995), and they are located precisely where numerous *Glycymeris* items should be expected in the future: next to the Aegean, the eastern Balkans and the Danube basin sites. Only one *Pectunculus* (*Glycymeris*) bracelet has been published so far from this vast area; it comes from Gura Bacului, dating to the Early Neolithic (Vlassa N., 1976, Fig. 14, 11; Lazarovici G., Maxim Z., 1995, 154, Fig. 26, 1). Another *Glycymeris* bracelet from Kremenjak by Čoka (Kalicz N., Raczky P., 1987, 26, Fig. 13) and a round pendant from Battonya-Parázstanya (Kalicz N., Szénászký J., 2001, 32, Abb.4.1, Abb.8.1, Abb.9.1), both dated in the Late Neolithic, can be recognized from photos.

Conclusion

A detailed study of the Late Neolithic shell collections from Vinča showed that along with the *Spondylus* ornaments, there is a large number of bracelets made of *Glycymeris* shell. To date, that shell has been reported in European Prehistory mostly for the Aegean. On the other hand, it was noticed that *Glycymeris* items are very similar to those made of *Spondylus* and that in most of the collections these different shell genera were mixed together and published as *Spondylus* items. It is therefore to be expected that the existent *Spondylus* assemblages conceal a large number of *Glycymeris* artifacts. At the moment, Vinča settlement offers guidelines for further research of shell items in the region. General observations are that: a) along with *Spondylus*, *Glycymeris* shells are represented in large numbers; b) only bracelets were made of *Glycymeris* and; c) there are diachronic trends in the frequency of *Spondylus* and *Glycymeris* artifacts; these conclusions should serve as a future analytical framework. Considering the

regional character of Vinča, more *Glycymeris* bracelets should be expected at those sites that were contemporaneous with the earlier part of the Vinča sequence.

So far, a large number of *Glycymeris* valves have been discovered only in the Aegean region, indicating the primary origin of most of the European artifacts, and most probably the origin of bracelets from Vinča. Therefore, the reason for the cessation of *Glycymeris* delivery to the interior of the continent should most probably be sought in the orientation of the Aegean communities towards other kinds of ornaments (Nikolaidou 2003). After the disappearance of *Glycymeris* bracelets from the exchange network, which probably happened towards the end of the 5th millennium BC, the utilization of *Glycymeris* shell in the middle Danube basin is detected again only 2500 years later. In the Middle Bronze Age necropolis Ostojićevo by Kikinda, pendants of perforated *Glycymeris* valve are a part of some grave inventories (National Museum of Kikinda, unpublished material, inv. A 3159). This time, however, a dilemma of their origin is nonexistent. These pendants do not have the Black Sea or the Aegean origin – they were made from fossil shell.

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NOTE

- * This paper is dedicated to the memory of the late Prof. Bogdan Brukner, who truly inspired my professional work

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A HOME ALTAR AT GURA BACIULUI

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Magda Cornelia Lazarovici

Keywords: *Romania, Early and Middle Neolithic, Gura Baciului and Parța, sanctuaries and cultic places*

Definitions and generalities regarding the altars

Naology (*Naos* = the main room in a temple; *logos* = science) it is a discipline involved in the study of the sanctuaries, altars, their type and functionality.

Temple in our accept is a monumental cult place, where different religious practices took place and that contains several altars and sanctuaries.

One of the most expressive Neolithic temples is Sanctuary 2 at Parța (Banat culture), partially reconstructed in Banat Museum, Timișoara. It is a dwelling with monumental clay statues, over 1,75 m high (*Lazarovici Gh., 2000; Lazarovici Gh., et alii 1994; Lazarovici Gh., Maxim Z., 1995b; Lazarovici Gh. et alii 2001, 214 and the next*).

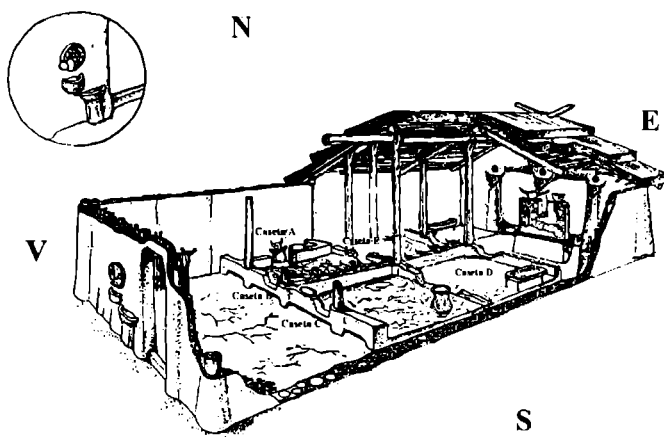


Fig. 1: Parța, Sanctuary 2

The temple or Sanctuary 2 at Parța was devoted to several couples of divinities, fig. 1: *Great Mother* (with a human or cow head) with the *Bull partner; Sun and Moon*. In the same place it was also noticed a cult related with *the pillar, axis mundi*; there are lonely or double pillars at the entrance or marking altars or sanctuaries). At Parța, there are several areas related with the sacral rituals:

- **The monumental altar** with the double statue has a pedestal for offerings deposition;
- **Altar A** was used for ritual burning;
- **Altar B**, used for the deposition of different products in pots (pot with a human face that contains bones and other 6-7 pots (some destroyed or missing because of a later digging for a well).
- **Altar C**, used for the ritual depositions of cereals dedicated to the couple *Sun – Moon*;
- **Altar D**, used for ritual depositions and blood sacrifices for the couple *Great Mother – Bull*;
- **Cultic grinding** is proved by a grind (with a clay bed for the flour) find on the western wall of the sanctuary and a cup on top of it, fig. 1. Above these, another round span was in the wall, decorated with a clay Moon, suggesting the *Sun-Moon* couple (Lazarovici Gh. et alii 2003; Lazarovici Gh. 2003).
- **Altar E**, used for ritual offerings dedicated to the couple *Great Mother – Bull* and other;
- The rectangular span in front of the main double statue designated to the light adoration was oriented to the east, to the sun rising. This span was decorated with two columns/pillars ended with bullheads, having different symbols between the horns for the Sun and respectively the Moon.

Other dwellings and cult places at Parța.

In other dwellings monumental objects have been found: some of them have been used as totems, other have maybe a sacral role for offerings or burning, associated with cassettes and marking small altars.

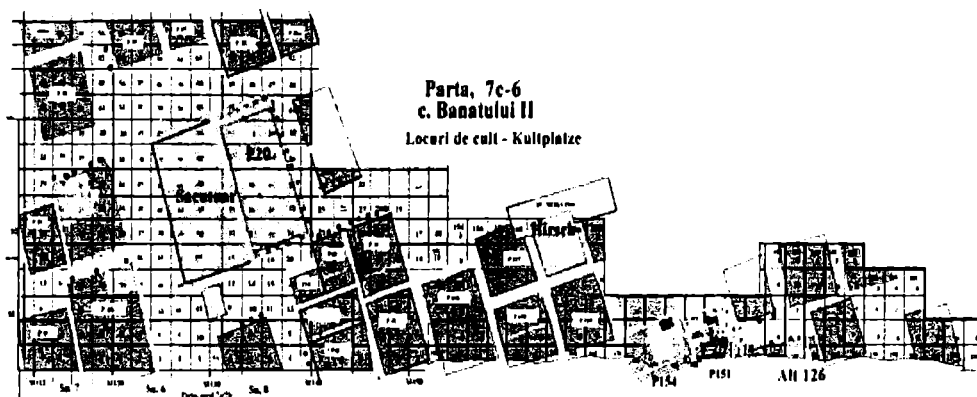


Fig. 2: Cult places at Parța, level 7c-6

In Sanctuary 1 at Parța

- Altar A was used for burning and offering deposition (portable fireplace, socle for an idol-bust and ashes, cassettes);
- Altar B was used for blood offerings (birds, small animals);
- Altar C was used for burning cereals or other straw offerings (fireplace, pit in the eastern part of the sanctuary).

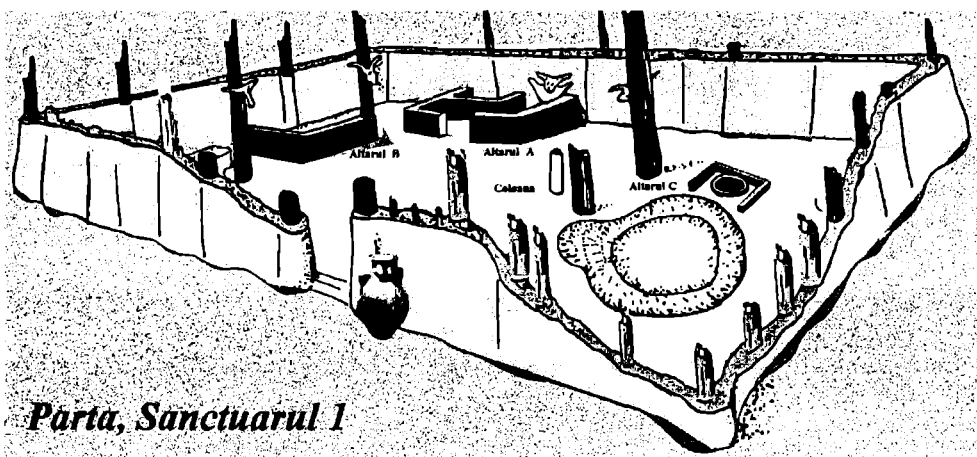


Fig. 3: Parța, Sanctuary 1

Monumental pieces have been found in each big block of houses on the walls. They indicate the place of a home altar/shrine or the place of a family totem:

- **House of the Moon;**
- **House of the Deer;**
- **House of the pillar and of the bull head;**

We believe that is quite difficult to separate the communitarian and home altars or sanctuaries, but they represent models of imagination in the Danube area or for the mythology of Early and Developed Neolithic.

The appearance of the monumental altars, clay pillars, monumental blocks of clay or stone is very old. In the Near East, sanctuaries are noted in 8/7 millennia at Göbelki Tepe, Nevala Çori etc. (Hauptmann H., 1993; Hauptmann H., Schmidt K., 2000; Schmidt 1997/1998; 1999; 2000); later on, in 7/6 millennia only at Çatal Hüyük there are over 30 communitarian and home sanctuaries, in a true Neolithic town. All these sanctuaries contain monumental pieces. In the inventory of these sanctuaries frequent there are column, stela, bench, altar, cassette, fireplace, cup etc.).

All of these have been used for burning some products (*fumigatio*), for blood sacrifices (*mactatio*), for libation (*libations*), for offerings (*oblatio*) etc.

Based on these just presented reasons, that belongs to some civilizations with a protourban character (Pața was surrounded by four ditches and 4-5 palisades), with a socio-religious center (temples, altars), with economical activities related with the producing of the pottery and others activities (Lazarovici Gh., et alii 2001) – we reanalyze here some of the Gura Baciului discoveries (Lazarovici Gh., Maxim Z., 1995).

We underline again that Gura Baciului is very important for the Early Neolithic in Romania, while this site reflect the spatial organization over a long period of time (during cca. 7 phases of architectural evolution), were the sacred place, maybe with the community totem, *axis mundi*, was in the middle of the site (only two pits have been discovered here). In all these mentioned phases it was kept an organization model around a small square (fig. 5), dwellings being rebuilt in the previous spaces (Lazarovici Gh., Maxim 1995, fig. 10-14), maybe reflecting familial relations.



Fig. 4: Ain Ghazal, sanctuary, altar?
– semicircle apse with floor and a
central pit (after K. Schmidt K)



Fig. 4b: Nevali
Çori, column
with statues
(after H.
Hauptmann)

The lonely dwelling that might be considered as a *home sanctuary* is P24 (*Lazarovici Gh.*, Maxim Z., 1995, 109-111, 145-146, fig. 13/4, 21/7; fig. 33, area M7). Here, on the walking level (P24a), was found a stela* made by a local grit stone (16,5 x 11 cm, 15 mm thick). This piece, with the inferior part broken from older time, represents a female bust, where two orifices represent the breasts. This piece belongs to the middle sort category, entirely having about 25 cm height.

Stela is a schematic representation of the *Great Mother* (fig. 6). On the dorsal part it is the head of a phallus and two three alveolus that might represent the drops of seeds (sperm), the pieces being related with the fertility and fecundity cult. We do not know how it was the altar on which the stela was set on; on the upper part it is an orifice, but without anatomical meaning. We believe that this might indicate a home altar.

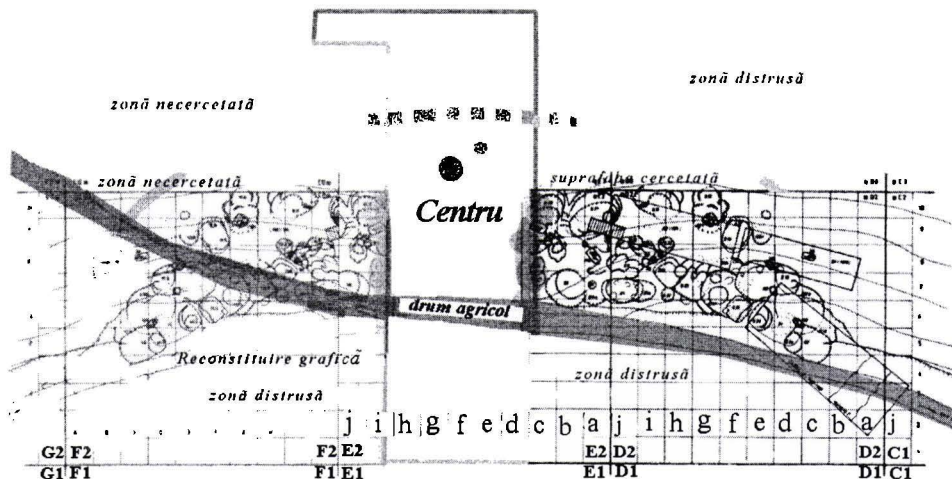


Fig. 5: Gura Baciului, Early Neolithic

This complex P24 is related with Starčevo – Criș culture (cca. 6.300 – 5.500 CAL BC) and especially with phase IVA, about 5.400 – 5.300 CAL BC (Lazarovici Gh., Maxim Z., 1995, 137-142, tab. 17/6b; Lazarovici Gh., 2006).

We have to remember that in the perimeter of this complex it was discovered an incineration grave (M7), covered with a monumental stone head. Incineration is not very usual in the Early Neolithic in Romania, most of the graves being of inhumation in a cower position (for the graves problems see Lazarovici Gh., Maxim Z., 1995, 176-197, 395-402).

The abandon of the complex (house P24), the deposition of the sherds, bones and other domestic fragments, the burying of fired skeleton (fire took place in other part) between these fragments, over which it was the stone head maybe reflect the ritual devoted to a priest or priestess.

Such persons involved in the maintenance and supervision of the rituals in the temples, sanctuaries had to exist even from Preceramic Neolithic and later on. Even later on there are very interesting rituals related with the most important steps in the lifetime (birth, initiation, marriage, death).

One hundred years later after the end of Gura Baciului site, in Vinča culture, phase B (cca. 5150 – 5050 CAL BC) at Balta Sărată (Lazarovici Gh., et alii 1999; 2000; 2003a) it was discovered the house of a priestess related with

sacred grinding, cultic deposition and keeping of the grind (for sacred grinding see *Lazarovici Gh., 2003*).

We do not intent to extend here all the problems related with the rise of such a stela and the deposition of the incineration grave between the fragments of the house debris, but we have to notice that the rituals related with this sort of „priestess” are very interesting.

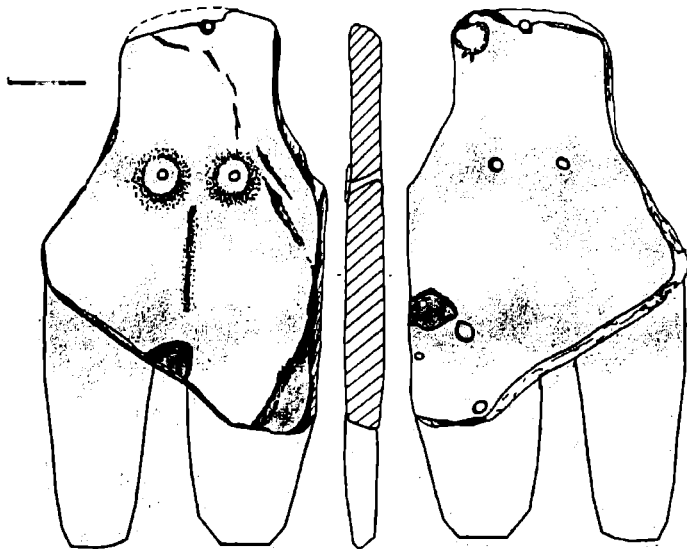


Fig. 6: Gura Baciului P24a, stone stela

The problem of the stone heads, of the head, or skull cult has been largely presented in the Gura Baciului monograph. There are many other examples, sometime very shortly presented, as the stela we have mentioned here.

After a set of theoretical studies about rituals and other discoveries at Balta Sărată or Tărtăria, in the Precucuteni culture at Poduri (House 36 near fireplace 2, *Monah D., 1982, 11-13; 1997; 2001; Cucuteni 1997, 109, cat. 14a-d; Monah D., 1997, 35; Lazarovici Gh., et alii 2001, 289*), Isaiia (Sanctuary 2, *Ursulescu N., 2001; Ursulescu N., et alii 2002; Ursulescu N., Cotiugă V., 2000*) and even at Sabatinovka (*Zbenovič V., 1996, 32-33, Abb. 15*) it seems that inventories of such priestess have been discovered, so their existence seems to be real and necessary.

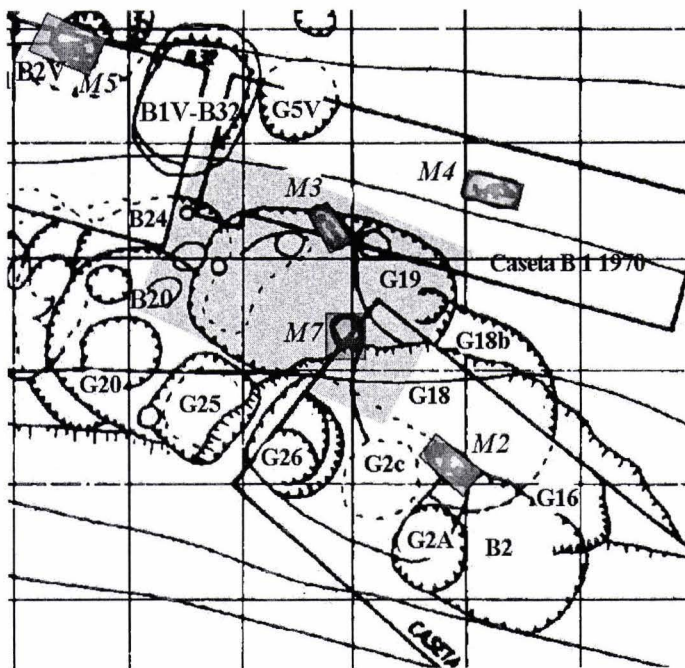


Fig. 7: Gura Baciului P24a, area grave 7



Fig. 8: Gura Baciului P24a, burnt grave 7

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CONCLUSIONS FROM THE RESCUE EXCAVATIONS AT THE NEOLITHIC SETTLEMENT OF STAVROUPOLI, THESSALONIKI

Dimitrios Grammenos

Keywords: Macedonia, Greece, Middle and Late Neolithic sites, Thessaloniki, Stavroupoli

The text published below is a translation of the main portion of the concluding chapter from the first of two published volumes on the Neolithic settlement of Stavroupoli (*Grammenos D, Kotsos D. B., 2000*). These two volumes present the comprehensive results of rescue excavations at more than ten properties in the Neolithic settlement of the municipality of Stavroupoli, Thessaloniki.

Houses and Structures

Although there is no possibility whatever of our speaking of a settlement, nor even of a dwelling, it is certain that all the housing types known throughout the Balkans are encountered. However, except for one case, piles are set directly in the ground, either in its natural state or after leveling, and not in a foundation of built mud walls or incorporated into walls, as was the case with the recently-discovered examples at, e.g., Karanovo (*Hiller S., Nikolov V., 1997*). Stone seems to have been used for building walls during Stavroupoli II. It would seem that neither clay nor organic materials were used, even for plastering. For example, no impressions of branches, reeds, or straw were preserved that would presuppose their use in construction, in contrast with the older part – possibly one or two centuries later than Stavroupoli – of the settlement at Makriyalos (according to the most recent excavation data, *Pappa M., Besios M., 1999a; 1999b*). This fact, which may be accidental, and the use of pits, must be an architectural feature peculiar to this settlement and to those of

the wider region (a number of persuasive proposals concerning their reconstruction were put forward for Divostin, *McPherson A., Srejovic D., 1988*). In any case, the pit with stepped access of Dagli 12 could only with great difficulty be considered an underground dwelling-space, covered by planks, as nothing similar has been found, and the pit's small dimensions would not have permitted such use. In any case, the identification of pits in a variety of sizes and with a range of uses appears to open a new chapter in Neolithic research in the region. Further north, such pits were known from a much earlier period, the end of the MN. "Pit-dwellings" contemporary with Stavroupoli I are noted at Promachona (*Koukouli-Chysanthaki H., et al. 1998*) - just as we have noted them at Makriyalos (see also *Pappa M., et al. 1998*) - and at the Toumba of Kremasti-Koilada (*Chondrogianni-Metoki M., 1999*), contemporary with Stavroupoli I, in the so-called transitional period of Bulgaria (*Todorova H., 1995*) as being storage spaces within dwellings (*Karul N., 2000*).

From what one is able to conclude from the above-mentioned structures as pit-dwellings, none have preserved intact their excavation contexts. But this does not mean that those proposed as dwellings could not have been dwellings; rather, their dimensions, the holes for piles - chiefly at Makriyalos - as well as the large number discovered would suggest that they actually were dwellings. Their sole use could not have been, e.g. for the storage of grain, as Lichter would have it due to his unfamiliarity with recent materials from, e.g., Macedonia (1993, 26; this view was accepted by Nikolov in his review of Lichter in *Germania* 76, 1998, 333-337).

The so-called "ditches" now appear to constitute an excavation reality for the Neolithic of the region and apparently the settlement of Stavroupoli is to be included in this group of levels of settlements where ditches have been discovered, with Makriyalos first and foremost; in the case of Stavroupoli, excavation documentation must continue. It also appears almost certain, at least on the basis of the data obtained up to now from the settlements referred to here, that in contrast to Thessaly no interior of a dwelling or interior space has been discovered intact. As a result, it is difficult, hypothetical, even risky to attempt an approach to the substantive question of the household, i.e. of its material furnishings, something which is vital for matters Neolithic (*Halstead P., 1999; Stefanovic M., Tringham R., 1997; Souvatzi S., 2000*). In terms of the completeness of

their data, the unique examples from Northern Greece, though considerably more recent than Stavroupoli, would appear to be the household assemblages from the French and Greek excavation sectors at the base of the tomba of the prehistoric settlement of Dikili Tash (*Treuil R., Tsirtsoni Z., 2000*), where the view is expressed that it was not only subsistence-related activities connected which took place within these Neolithic dwellings; this view, however, does not appear to be confirmed by findings from the Greek excavation trench (*Koukouli-Chysanthaki H., et al. 1996, 695*).

There has been an effort to renew our knowledge of the environment west of the Thermaic Gulf, its varying size, plant-life as determined by analysis of pollen, etc. (*Andreou S., Kotsakis K., Fotiadis K., 1996, 562 ff. and note 185*), on the basis of the excavations at the prehistoric settlement of Archontiko, Giannitsa (*Papanthimiou A., Pilali A., 1997, 171-172*). During the age when the settlement was inhabited (LN-Early Bronze Age, settlement nr. 14, *Andreou S., Kotsakis K., Fotiadis M., 1996, 563 fig. 2*), "it was observed that the sea was 5 km. further south of Archontiko ... It thus seems that there was the possibility for development of a relatively broad tidal zone with coastal salt-water swamps, where the water's depth did not exceed 1 m., especially in the areas around the mouths of local torrents. Thus, the gulf lying in front of Archontiko was about like the modern bay of Thessaloniki, as it was before human intervention in the 20th c." Comparable research was not carried out for Stavroupoli, but on the basis of Archontiko, it would seem that Stavroupoli, through coastal salt-water swamps, was even closer to the sea.

Not a single example of any sort of ideogram or writing more generally, either painted or incised, was identified among the entire assemblage of pottery and small clay objects (*Grammenos D., 1997* for a discussion of this topic). We note that a bronze bead was found (Proxenor Koromila 4). Had sifting occurred, more examples might have been found. But in any case the use of bronze in the wider region is documented (recently at Makriyalos *AEMTh 8, 1994, 137 ff.; 9, 1995, 173 ff.*, Mandalo *AEMTh 10A, 1996, 146; FN, Promachona, AEMTh 12, 1998, 70 ff.;* Agia Lydia Asprovalta, *Grammenos D., Kotsos S., 2000*).

On the basis of radiocarbon dating of samples done at the Demokritos lab, and taking into account the totality of high and low published dates for the wider region (*Andreou S., Kotsakis K., Fotiadis M., 1996, 538 ff.* for the

general framework; Grammenos D., 1991, 95 ff. on Vasilika; Fotiadis M., Chondrogianni-Metoki A., 1993 for Kitrini Limni dating to the LN; Efstratiou N., et.al. 1998, 58 for Makri; Boyadziev Y, 1995 for Bulgaria; Thissen L., 2000 for Karanovo), we discover that on the basis of these datings, the Demokritos lab puts Stavroupoli I near the beginning of the MN, i.e. perhaps more than 250 years earlier than what was anticipated, and not towards the end of this phase, i.e. near Vasilika I (Karanovo III, end (?), Anza I, Sitagroi I, Dimitra I, Sesklo III), as would have been expected (Coleman J. E., 1992), although the chronological inclusion of Vasilika I in this group was done only through relative dating criteria. Rough comparisons with well-known MN vase assemblages, e.g. that of Thessaly (e.g. Papathanasopoulos G. A., 1996, 1100-111), of Vasilika I and II (even if in this phase there were added a large number of shapes – around 30), with the painted categories of, e.g., Thessaly or Servia, would probably not permit us to accept a correspondence with Thessalian and other chronologies obtained through radiocarbon dating procedures, at least in the present phase. But one should take into consideration the fact that all the samples came from wood found in the general area around hearths, or within hearths, and as G. Maniatis, the Director of the Demokritos Archaeometry laboratory, makes clear: “The samples may have come from the inner rings of trees of very great age [in our case, 300 years], and there may have been selected small pieces which came exclusively from inner rings.” And certainly there is nothing to exclude the possibility of reviewing the radiocarbon chronologies for the beginning of the Late Neolithic.

A small-scale systematic approach would be helpful for the data from Vasilika and Stavroupoli, as well as for that coming from the settlement located on the site of today's International Trade Fair (ITF) grounds, the preliminary announcement of whose excavation data (Pappa M., 1993) would suggest the following:

1. In the final publication it should have been clarified how category 30 of the ITF settlement differed – as noted – from that of Vasilika as regards decorative motifs. From this standpoint, there should be no substantial differences between Vasilika and Stavroupoli.

2. There are no examples of the characteristic Thessalian MN painted pottery from Stavroupoli. Thus, it must be considered certain that the International Trade Fair settlement site is older, and is to be assigned to MN II.

As concerns the important issue of Neolithic research today – and not only local research concerning one region – the question of the social and economic relations of toumba-flat settlement and the various problems and questions which emerge from this, I have expressed my views upon publication of the exhibition catalogue, “Neolithic Civilization in Greece” (*Grammenos D.*, 1996). Perhaps these views cannot be modified given the state of modern research. However, since it would seem that on the basis of recent publications (*Kotsakis K.*, 1999; *Halstead P.*, 1999) these views are not considered to be in harmony with the directions of current research, I will return to them by citing a number of observations.

1. The Neolithic-Early Bronze Age settlement of Dikili Tash has been shown to have been established initially on the slightly sloping cone of a Pleistocene deposit (*Koukouli-Chrysanthaki H.*, et al. 1996, 683 ff.), due to its topographical advantages. As students of the site agree, “its modern-day form has emerged from the erosion of its slopes,” and, I might add, from the shrinkage of the deposits towards its peak, as well as the cone we referred to, in the Bronze Age. Of course, the settlement of the end of the MN and beginning of the LN – indeed, perhaps throughout its life – was flat, or rather, would not have had a tendency to shrink, and that to an enormous extent, an issue about which I am unaware of any discussion in the literature (*Koukouli-Chrysanthaki H.*, et al. 1996, 683 fig. 2). The case of Dimitra (*Grammenos D.*, 1997) is similar, as are those of all comparable sites in Eastern Macedonia.

2. Comparable examples from Central Macedonia include Thermi B (*Grammenos D.*, et al. 1990; 1992), or Mesimeriani (*Grammenos D.*, *Kotsos S.*, 2002, Addendum).

3. All the flat sites remain flat throughout all their habitation phases, unless they have Bronze Age fill. If Neolithic fill(s) also appear in a shrunken form (as *toumbas*), this is owing to the reasons given in the case of Dikili Tash, which I have in the past supported, and which do not appear to differ from those operative at e.g. Karanovo. Recent measurements (*Andreou S.*, *Kotsakis K.*, 1992, 352) within the framework of a surface survey of Langada appear to have demonstrated the same for the settlement of Kavalari, which is shown to have been a flat Neolithic site that shrank into a *toumba* in the Bronze Age. The flat settlement, which was naturally far more extensive than that of the *toumba*, was covered by alluvial fill. The base of the *toumba* contained Early Bronze Age fill, as this writer can verify

as a result of post factum examination of the disturbed fill created by the opening of a fuel pipeline. In the course of an archaeological examination carried out during the construction of the new Egnatia Odos, we identified a similar phenomenon, though one involving not alluvial but man-made fill, through systematic geological measurements and examination of the material coming from the drilling sample taken at the base of the Perivolaki toumba, at a distance 70 m. to the South and running West (350 m.) and East (350 m.). There were 21 measurements taken in all, which demonstrated that there was fill over a length of at least 700 meters, ranging in depth from 5 m. (at the edges) to more than 8 m. (at the center). The pottery that came from the sample is somewhat difficult to date with certainty, but it is clearly prehistoric. I believe that this fact, in combination with the fact that in the wake of excavation research in mid-2001 for complementary works being carried out on the Egnatia Odos, it is certain that the surface fill belongs to the Iron Age, together with the fact that the fill from the toumba belongs to the Iron and Bronze Ages, and the fact that Huertley had identified Neolithic pottery, allows us to conclude that we are dealing with yet another enormous Neolithic settlement. However, as determined by excavation (*Lioutas A., Kotsos S., 2002*), it was also a very large Iron Age settlement.

4. We can make similar observations concerning sites in Western Macedonia (Giannitsa area: *Chrysostomou P., 1996*, 164 ff.; Imathia: *Stefani E., Merousis N., 1997*, 94 ff.; 1998, 384 ff.), but there is no question that the issue would require systematic and extensive investigation. In any event, in cases where there is no continuation of habitation into the Early Bronze Age, these researchers understand by the term "toumba" very low outcroppings of large, extensive settlements (personal communication). These outcroppings are apparently the result of erosion, which does not find appropriate ground for the creation of a toumba.

5. Concerning the extent of flat settlements, the density of habitation, and related questions: the pre-Dimini (I) and Dimini (II) phases of Makriyalos minimally overlap in terms of their development in space (*Besios M., Pappa M., 1993*), each occupying about one-half of the total extent of the settlement's 500 stremmata (125 acres), of which approximately 12% was excavated. During the pre-Dimini phase of Makriyalos (I), a more recent phase than Stavroupoli I, there was relatively sparse habitation, in contrast to the Stavroupoli I phase. The population

explosion – for how else could dense habitation (as expressed by the density of dwellings and every type of construction) be understood? – is observed everywhere at excavated sites in the Balkans. However, on the basis of the Stavroupoli I data, dense habitation is also identified in MNIII, as was clear from the data we have cited, in combination with a total expanse of some 100 stremmata (25 acres). We also have fill documented through drilling, and not simply through the spread of bones at the enormous LN settlement of Assiros (*Andreou S., Kotsakis K., 1992, 352 ff.*), which extends over 300 stremmata (75 acres). A recent postgraduate thesis (*Poloukidou C., 2001*) has demonstrated that the spread of archaeological material across this expanse of land does not appear to have any empty spaces that would permit the hypothesis of sparse habitation by virtue of the presence of e.g. cultivated plots between houses. A comparable recent work, even including population estimates, was done at Çatalhoyuk (*Hodder I., 1999*) within the framework of preliminary works in anticipation of beginning new excavations there. The population estimate regarding the eastern portion of the settlement at the end of the Neolithic period ranged between 5,000 and 10,000 people in the opinion of the specialist Matthews, though Hodder limited this number to under 5,000 in his own conclusions (1999, 363).

On the basis of electromagnetic testing, and according to more modest calculations, an expanse of 40 stremmata (10 acres) has been estimated for the excavated settlement of Promachona-Topolnica (*Koukouli-Chrysanthaki H., 1995*).

Bearing in mind all the above, I believe that my view, expressed in the past regarding the non-existence of shrinkage and the accompanying conclusions for the LN, is not at all “astonishing” (*Kotsakis K., 1999, 68*), but rather is supported by the actual data and does not seem to accord solely with theoretical positions (*Kotsakis K., 1999; Halstead P., 1999, etc.*). This view could be summarized as follows: 1. Neolithic *toumbas* were reference points to ancestors, a sort of “habitation monuments”. Substantive differences – ecistic and others – are documented between the *toumba* “acropolis” of Sesklo and the surrounding 10-stremma “cities” (Theocharis) (cf. *Kotsakis K., 1994*). 2. The differences between flat settlements and their shrinkage into *toumbas*, as at Sesklo, is a phenomenon which becomes comprehensible at many levels: whether at that of intensification of production which is related to the development of the household as an

independent production unit that altered the social character of Neolithic society, something which is expressed by the acceptance of the settlement pattern of the *toumba*, or by the *toumba*'s separation from the flat settlement, as was the case at Sesklo. Going even further, Halstead (1999, 91) stated that "This competition between households lies behind the formation of monumental tell villages, with their ostentatious emphasis on household antecedents, and the maintenance of regional societies with a shared material culture expressed particularly in those elements that symbolized the household and extra-household hospitality".

Specifically as regards Sesklo, we believe that one should also examine in detail the reasons cited here for the formation e.g. of the entirety of the fill at Dikili Tash, and for the fact that at Sesklo A and B there was no unified Dimini horizon for the period for which we are primarily claiming the existence of the phenomenon of extensive settlements, gatherings of populations, etc. This phenomenon could be considered to obtain in certain cases for MNIII as well, on the basis of Stavroupoli I and the more recent excavations at Mesimeriani (*Grammenos D., Kotsos S., 2002, Addendum*). The unit of the "household" is in fact a useful theoretical concept for dealing with issues involving social, economic, and other topics in the Neolithic era. However, we believe that this concept needs to be connected to the question of relations between *toumba* and flat settlement. The gradual transformation from Neolithic to Early Bronze Age constantly sought in the research could also be sought in other sectors, e.g. in burials, as has been stressed (*Kotsakis K., 1999*). It is also indicative that the enormous Neolithic settlement of Stavroupoli displays complete homogeneity in distribution of every type of excavation data, displaying not so much as the initial phase of any transformation, apart perhaps from the remains of a stone wall belonging to the Stavroupoli II phase (Oraiokastros 104).

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Fig. 1: Pit belonging to House A. At left, oven and secondary pit (Oraiokastro 98)

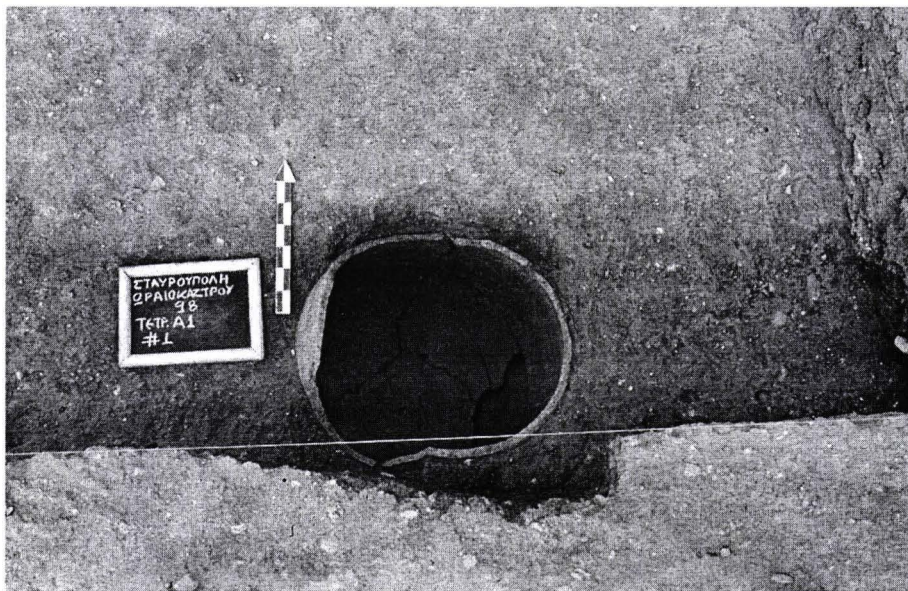


Fig. 2: Storage pithos found in the area of House A (Oraiokastro 98)



Fig. 3: Lay-out of the excavation of Dagli 14, showing the remains of the house in the central squares



Fig. 4: Portion of the floor and part of a stone base from a wall block (Dagli 14)

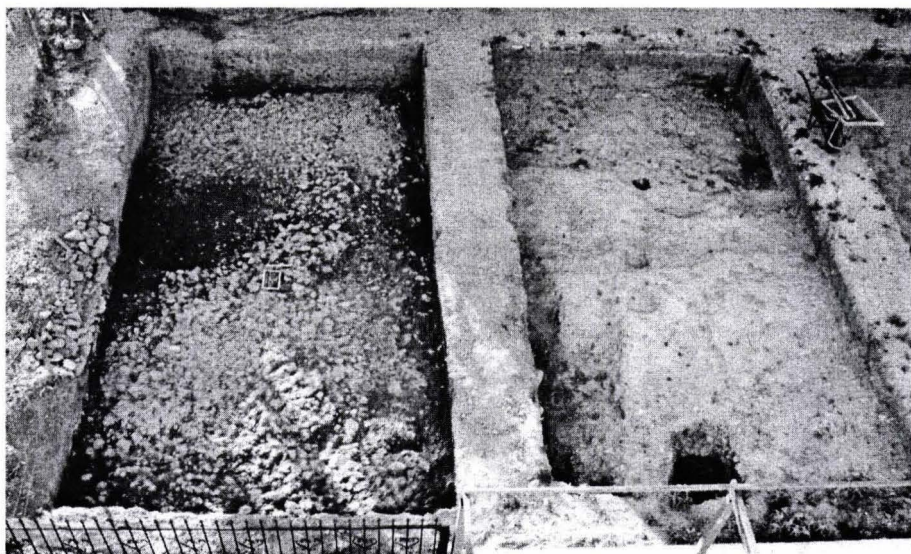


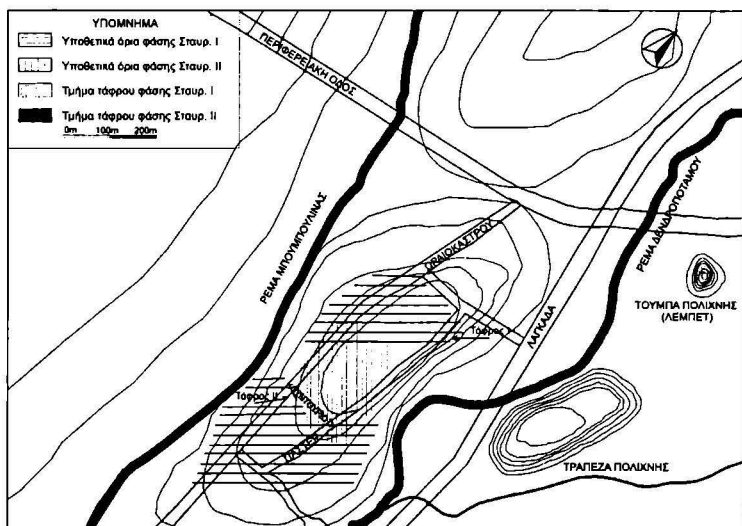
Fig. 5: Stone-covered space (Kountourioti 6)



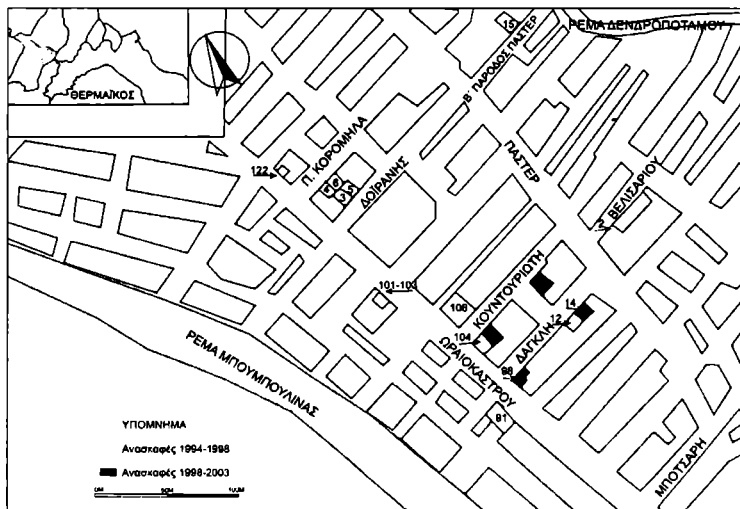
Fig. 6: Part of ditch A (Kountourioti 6)



Fig. 7: Section of a stone wall (Kountourioti 6)



Drawing 1: Plan of the wider area of the Neolithic settlement of Stavroupoli, showing the position of the tomba and trapeza of Polichni (Lebet)



Drawing 2. Plan of the zoned area of the Neolithic settlement, showing the locations of excavated plots

BURIALS IN THE AREA OF THE FOENI CULTURE GROUP

Florin Draşovean

Keywords: *Banat, Foeni Group, burials*

The Foeni culture group has recently been defined as a result of systematic research undertaken over the past 15 years on the sites at Foeni, Parţa-tell II and Uivar. At this stage of research, its cultural content, the territory it occupied, as well as its ethnocultural relations with other contemporary civilisations have been specified (Draşovean F., 1994a; 1994b; 1997; 2004; 2005). The analysis of Foeni type finds and their comparison with those of the Petreşti culture in Transylvania allowed us to postulate the fact that the Foeni group played a decisive role in the genesis of the Petreşti culture, within the framework of a complex process – of migration, diffusion and cultural synthesis (Draşovean F., 1996, 7, 85-86, 98-99; 2002, 76-77; 2004, 27 and foll.). Moreover, in the light of the new archaeological finds in Transylvania (Gligor M., 2006), we may consider the material of the Foeni group as an initial phase of the Petreşti culture. In what follows, the presentation of information regarding the burials of the Foeni group in Banat within the context of similar discoveries in Transylvania is meant to bring to attention some additional data which sustains the crucial role of the Foeni group in the genesis of the Petreşti culture.

In Banat, research undertaken over the past 15 years at Foeni and Parţa-tell II led to the discovery of two inhumation burials which belong to bearers of this culture group.

The Foeni grave was discovered on surface 7, quadrats 3-5, at the depth of 0.6 m., at the bottom of the anthropic deposits (fig. 1). This surface is situated on the north/north-eastern limit of the Foeni settlement, an area where the culture layer is thinner, measuring only 0.3 m. The grave pit could not be defined. The bones of the thorax had been disturbed, and many of them were missing. The body lay crouched on the right side with legs strongly flexed. The left hand – of which only the ulna was preserved –

was brought under the mandible, while the head was in the south with the face eastwards. Due to the fact that few bones had not been disturbed, the precise position of the skeleton in relation to the cardinal points could not be fully established, but it can be approximated that it was oriented north-south. No grave goods were found.

Anthropological analysis revealed that the grave belonged to a female of about 35 years of age, about 149 cm in height estimated by the Manouvrier method, or 157 cm. according to the Bach method (*Muntean M., Vermeşan H., Muntean C., 1996, 289*). Very interestingly, the left femur showed signs of having been affected by poliomyelitis, which makes it the oldest case of the disease in medical history (*Idem, 291*).

The Parţa-tell II grave was discovered in quadrats 17-18, at a depth of 0.80 m, at level II, which belongs to the Foeni group (fig. 2). The bones were in anatomical position and there were no grave goods. The body had probably been laid in a pit which, despite our efforts, could not be defined. The skeleton, which was in anatomical connection, crouched and lying on its right side, was oriented east-west with the head eastwards, and face to the north. The lower limbs are heavily flexed and the forearms are flexed and placed on the arms. The left hand, strongly flexed and bent so as to overlap the humerus and the radius, was brought under the mandible, and the right one, placed next to the chest, was flexed and partially beneath the bones of the thorax.

The skeleton was that of a female who had died at the age of around 20-21, whose height was estimated at 153.5 cm by the Breitingen method. The metrical data, the indices and the morphological aspect revealed the fact that the young woman belonged to the Mediterranean anthropological type (*Muntean M., Vermeşan H., 1994, 138*).

One of the common features of the two finds was the fact that the grave pits could not be defined in either case. This lead us to the conclusion that they had been dug at shallow depth in the Foeni culture layer and did not disturb other soils or anthropic levels of other colours or consistency, which would have made the graves visible.

Also, in the case of both burials the skeletons belong to women – a 20-21 year old (at Parţa) and respectively a 35-year old one, at Foeni. From an anthropological point of view, they both have similar anthropometric data and belong to the gracile-Mediterranean type, proving the fact that the

bearers of the Foeni group were a Mediterranean population with an average height of about 1.5 m.

As far as the funerary rite is concerned, in the case of both Banat burials the bodies were laid on the right side, in a crouching position, with strongly flexed legs and with the left hand brought under the mandible. In the case of the Parța grave, the right hand is parallel with the thorax, and the ribcage was placed with the ventral side down. No funerary offerings were found.

In addition to these similarities, several differences could also be noticed. Thus, although both graves belong to females, the orientation of the axis of the skeletons is different. This may also be due to the fact that, in the case of the Foeni grave, the precarious conservation manifested in the lack of the thoracic and lumbar bones failed to reveal its precise orientation, forcing us to resort to approximation.

In the context of the funerary deposits of the age, different orientations of the bodies within the same cemetery are frequently encountered. They could be determined by a number of factors such as, for instance, the position of the sun in the sky in relation with the season when the burials were made, perhaps a certain status held by the deceased within the social hierarchy, as well as other causes which are unknown at this stage of the research. Without attempting a detailed analysis of the matter, it should however be said that differences determined by the different orientations of funerary deposits within the same cemetery or culture area are no exception within Neolithic Age funerary rituals (*Lichter C., 2001*, and bibliography). A similar situation can be noticed in the burials of the Petrești culture area, where orientations alternate between north-east/south-west (the Daia Română grave) and south-east/north-west (the Ocna Sibiului grave); as a consequence of the orientation of the skeletons, all the other data changes – with the exception of the side on which the deceased were laid.

Despite these differences, several common features are revealed by comparing the information related to the funerary rite and ritual of the bearers of the Foeni group and those of the Petrești culture, although there is still little information – especially in what regards anthropological data. Up to the present, six graves have been found in the Transylvanian area (*Paul I., 1992*, 115 and notes 41-44), displaying a series of characteristics common to those found in Banat. The first of these is that both in Banat and

in the intra-Carpathic area, the burials were discovered within settlements rather than in cemeteries (*Idem* 1992, 115). At the same time, the grave pits could not be defined (*Idem*, 116), which presupposes either that the body was laid in a shallow grave, or that it was laid on the surface and covered with a layer of soil which belonged to the culture stratum. These are the only two cases in which the pit of the grave cannot be identified.

Despite the fact that at the moment only one anthropological analysis exists in the Petrești area – the case of the Ocna Sibiului skeleton (*Idem*, 116) – alongside the conclusion that the Daia Română one belongs to the Mediterranean anthropological type, the available specialist analyses reveal the fact that the bearers of the Petrești culture were a Mediterranean population (*Idem*, 117). Moreover, the anthropometric data is similar to that of skeletons discovered in Banat, indicating that they belong to the same gracile-Mediterranean population.

To conclude, all the anthropological information and part of the information regarding funerary ritual that has been presented and analysed above demonstrates that the bearers of the Foeni group and those of the Petrești culture are the same population of the gracile-Mediterranean type. This information, corroborated with stratigraphic data from a number of Transylvanian sites (*Lazarovici G.*, 2000, 42 and fig. 3; *Lumea Nouă*, information courtesy of Mihai Gligor), with comparative, typological and stylistic analyses of the early Foeni and Petrești pottery (*Drașovean F.*, 2004) and archaeozoological data (*El Susi G.*, 2004, 40, 43), be it previously published or as yet unpublished, demonstrates more and more clearly the idea that the Petrești culture was born as a result of an influx of population due mainly to a process of migration of some Foeni communities from Banat, communities which are in their turn linked to, and originate in the ethnocultural phenomena of the Thessalo-Macedonian area (*Drașovean F.*, 2005).

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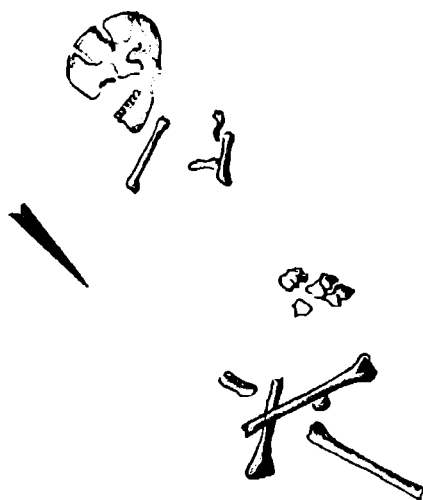


Fig. 1

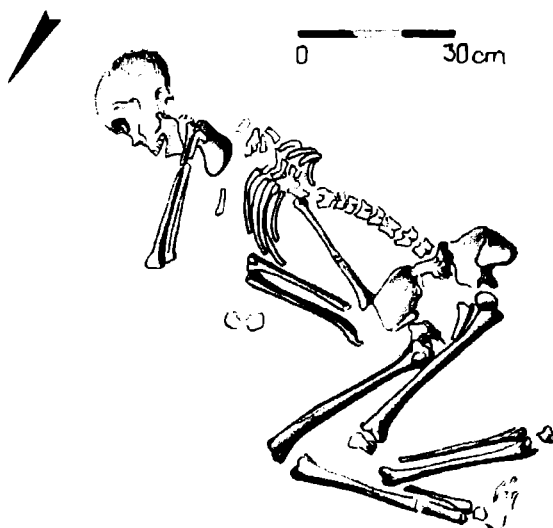


Fig. 2

DIE BEDEUTUNG DER SCHWARZEN GEFÄßBEMALUNG DER LENGYEE-KULTUR AUS ASZÓD (KOM. PES, UNGARN)

Nándor Kalicz

Schlagwörter: *Ungarn, Aszod, Lengyel-Kultur, schwarz bemalung.*

Zur Erinnerung meines Freundes Bogdan Brukner

Der Fundort Aszód-Papífoldek ist einer der wichtigsten Fundplätze der Lengyel-Kultur in Ungarn, östlich von Budapest etwa 50 km (*Kalicz N., 1969, 177-205; 1974-75, 33-39; 1975-1976, 51-61; 1976, 117-127; 1985; 1998, 96-112; Kalicz N., Kalicz-Schreiber, R., 1983-1984, 309-326*). Die ausgezeichnete Stelle kann diese Fundstelle ihrer periferisch-geographischen Lage bedanken, da der Fundort am nordöstlichen Grenzgebiet der Lengyel-Kultur liegt, wo sich wichtige Verbindungskanaln im Verlauf des ganzen Neolithikums zusammentrafen. Daraus war die östliche, südöstliche Verbindungslinie die deutlichste, wodurch die Gemeinschaften der Lengyel-Kultur mit dem Verbreitungsgebiet der Theiß-Kultur verknüpft worden war. Die Funde aus Aszód in die frühklassische Phase der Lengyel-Kultur gereiht werden können, die Erfolge der Verbindungen aus Aszód lassen sich überwiegend bei der Keramik studieren. Früher war schon bekannt, dass die typischen ritzverzierten Keramiken unter den Lengyel-Gefäßen aus Aszód in ziemlich hohem Maße repräsentiert sind (*Kalicz N., 1969, Abb. 10, 5, Abb. 13,3, 5, 14; 1974-1975, Taf 8, 1-7; 1985, Abb. 51, 1-2,4, Abb. 68, 1-10, Abb. 69, 1-11; 1998, Abb. 54, 1-9; Kalicz N., Kalicz-Schreiber R., 1983-1984, Taf, 7, 1-18*). Man kann sagen, dass so viele Theiß-Keramik als in Aszód, im vollen Gebiet der Lengyel-Kultur nirgends zu treffen sind. Aus Svodin und Bardoňovo sind nur ein-zwei Theiß-Gefäße bekannt (*Pavúk J., 1994, 200-207*). Die tiefgreifenden Verbindungen aus Aszód konzentrieren sich nicht nur auf die Darstellung der reichen ritzverzierten Theiß-Keramik, doch treten sie in anderen Formen und Verzierung der sgn. Grobkeramik sowie in gewissen Erscheinungen der

geistlichen Kultur auf, die nicht nur in Aszód, doch - obwohl in niedrigerem Maße - in der ganzen östlichen Gruppe der Lengyel-Kultur von Svodin an, bis zu Zengővárkony erschienen. Dazu gehören die im Totenritual erfindbaren Erscheinungen, wie z.B. die Beilage von Eberunterkiefer sowie Eberhauerplatten, usw. Die kräftige Ähnlichkeit bei den meisten Typen der „Grobkeramik“ zwischen der Lengyel- und Theiß-Kultur kommt nur in den nördlichen Gebieten der Lengyel-Kultur nicht nur in Aszód, doch auch in Svodin zur Geltung (*Němejcová-Pavuková V.*, 1986, 225-230, Abb. 1-2).

In meinem Beitrag möchte ich auf eine besondere Keramikverzierung hinweisen, die früher allerdings bekannt war, doch erregte sie keine höhere Aufmerksamkeit. Diese besondere Verzierung ist durch die schwarze Bemalung repräsentiert, die sich in hoher Zahl auf den Gefäßen der frühklassischen Lengyel-Kultur befindet (Phase Ib, wenn die formative Phase in die Ia Stufe datiert werden kann).¹ Die mit breiten schwarzen Streifen, bemalten geometrischen Muster befinden sich auf verschiedenen Gefäßen aus Aszód (*Kalicz N.*, 1969, Abb. 11, 1-16; 1975-1976, Taf. 5, 1-6; 1985, Abb. 73, 1-8; 1998, Abb. 56, 1-8; *Kalicz N.*, – *Kalicz-Schreiber R.*, 1983-1984, Abb. 1-14). Am häufigsten bedecken sie die Röhrfußschalen, ebenso den Röhrfuß sowie den Schalenteil dieser Gefäßart (Abb.2, 1-13). Die aus schwarzen Streifen gestalteten Muster fallen nicht selten auch auf den Amphoren auf. Die schwarzen Muster befinden sich auf allen Teilen der Amphoren, vom Rand an bis zum Boden (Abb. 3, 4-8, 10-13), sie fehlen von den Bechern nicht (Abb.3, 1-3. 9). Größtenteils bilden die schwarzen Streifen einfaches geometrisches Muster, selten parallele Bogenstreifen oder Zickzack sowie eine Reihe aus Vollkreisen, doch erschöpfen sie manchmal komplexe Motive, die ähnlicherweise auf den Amphoren, sogar auf Bechern auftreten. Eine besondere Erscheinungsform der schwarzen Bemalung lässt sich auf mehreren Schaleninneren bemerken. Obwohl diese zumeist in fragmentarischem Zustand zum Vorschein kamen, kann man auf den verschiedenen Bruchstücken feststellen, dass die erwähnten bemalten schwarzen Muster eigentlich stark stilisierte Menschenfiguren darstellen (Abb. 1, 1-8). Ein Merkmal ist, dass die Arme erhoben und die beiden Beine getrennt sogar seitlich des menschlichen Kopfes ist ebenso je ein schwarzer Vollkreis sichtbar. Mehrmals sind nur die kreuzförmigen Mittelteile der Figur erhalten. Es soll betont werden, dass die schwarze Bemalung immer in den Fundkomplexen mit typischer ritzverzierten Lengyel-Keramik, und auch mit ritzverzierten Theiß-Keramiken zusammen erscheint.

Die vorgestellte besondere Bemalungsart, wie erwähnt war, befindet sich der heutigen Kenntnissen nach, ausschließlich in Aszód aus dem ganzen Lengyel-Kreis, sogar trat sie in hoher Zahl und mit verschiedenen Motiven auf. Es lässt sich ferner zweifelsohne belegen, dass diese alleinstehende Verzierungsart keine eigene Erfindung der Lengyel-Kultur worden war. Wir können mit vollem Zeugnis die Annahme bestätigen, dass die Herkunft der erwähnten besonderen Verzierung östlich der Verbreitung der Lengyel-Kultur, d.h. im Gebiet der Großen Ungarischen Tiefebene in der mit der Lengyel-Kultur gleichzeitigen Theiß-Kultur zu suchen ist. Beinahe in jeden veröffentlichten Fundkomplexen der Theiß-Kultur kann man entweder alle, oder mehrere Sorten der schwarzen Bemalung auffinden. Obwohl die kleineren und größeren Ausgrabungen der Theiß-Kultur schon früher die schwarze Bemalung lieferten, doch erregte ihre Anwesenheit keine höhere Aufmerksamkeit (Tompá 1929, 57, Taf. 59, 4).

P. Patay veröffentlichte die Funde der kleinen Versuchsgrabung aus *Bodrogkeresztúr* (Kom. Borsod-Abaúj), und darunter drei schwarz bemalte Scherben, doch konnte er damit nichts zu tun. so schienen sie für Patay zu sein dass diese Scherben keine Analogien gehabt hätten (Patay P., 1957, 29, 31, Taf. 4, 14, 116-17).

Zum ersten Male war O. Trogmayer, für den die zahlreichen schwarz bemalten Keramikbruchstücken aus *Békés-Povád* (Kom Békés) unter den Theiß-Keramiken auffallend worden waren. Er bestimmte diese Scherben als Stücke der eigenartigen Gruppe aus der Theiß-Kultur (Trogmayer 1962, 32, Taf. 13, 5, 7-9, 11.12, Taf. 14, 3-5, 7-8, 10). Nachher bildeten die schwarz bemalten Keramiken den durchgehenden Bestandteil in den Veröffentlichungen der Theiß-Kultur. Diese verdienten nur eine Erwähnung ohne eine eingehende Analyse.

Aus *Hódmezővásárhely-Gorzsa* (Kom. Csongrád) berichtet F. Horváth über das Auftreten der schwarzen Bemalung, die in den unteren Schichten der Tell-Siedlung typisch waren (Horváth F., 1982, 211, Abb. 14, 12, Abb. 17,15, 17-18, 20; 1987, Abb. 28, 1; 1990, 46, Abb. 44, 1). In seiner letzten Veröffentlichung teilt Horváth eine Schale im Innere mit schwarz bemaltem Muster mit, das ein kreuzförmiges Motiv mit vier Vollkreisen zwischen den Armen darstellt (Abb. 5, 2) (Horváth F., 2005, Abb. 10, 1; Horváth F., Paluch T., 2005, Kat. Nr.120).

J. Korek stellt die ähnliche schwarzbemalte Menschendarstellung auf dem Halsbruchstück eines amphorenartigen Gefäßes aus *Szegvár* (Kom. Csongrád) dar (Abb. 5, 1) (Korek J., 1987, Abb. 22; 1990, 64, Abb. 76). Ebenfalls erwähnt er die hakenkreuzartigen Bemalungen im Innere von Schalen, worüber er vermutet, dass diese Motive als stilisierte Menschendarstellungen aufgefasst werden können (Korek J., 1990, 64). Gleichfalls erwähnt F. Horváth die schwarzbemalten Keramiken aus *Szegvár* in seinen Thesen (Horváth F., 1994, 31; Manuskript).

In der mittleren Tiefebene bei dem nahen Fluß Körös führte P. Raczky die Freilegung von *Öcsöd-Kováshalom* (Kom. Jász-Nagykun-Szolnok) durch, wo er wichtige Beobachtungen über die innere Chronologie der Theiß-Kultur machte. Nämlich konnte er die früheren Phasen (I-II) der Theiß-Kultur absondern. Das untere Niveau gehörte zur ältesten oder formativen Phase (I) der Theiß-Kultur und das obere Niveau enthielt die etwas jüngere. d.h. frühklassische Phase (Anfang der Phase II).² Raczky berichtete in mehreren Veröffentlichungen über diese Ausgrabung. In den ersten Vorberichten teilte er schon mehrere schwarzbemalte Keramiken mit, die im Wesentlichen mit den der anderen Theiß-Fundstellen (II. Phase), sogar den aus *Aszód* identisch waren (Abb. 4, 1-9). Die Bemalungsmuster befinden sich aus *Öcsöd* auf Amphoren, Schalen und im Inneren von Schalen. Die Muster stellen einfache gerade Streifen, Vollkreise und konzentrische Kreise, sogar stilisierte Menschenfiguren, sowie Hakenkreuze dar (Raczky P., 1986, Taf. 14, 1-10; 1987a, Abb. 24; 1992, Abb. 4, 6). Aus *Öcsöd* kam der Oberteil einer Amphora vor, deren besondere schwarze Bemalung ein Heiligtum und Menschenfiguren darstellt (Raczky P., 1986, 104-105, Abb. 7, 2; 1987a, 78, Abb. 28; 1990, 90, Abb. 112). Unter den Keramiken, die mit der erörterten reichen schwarzen Bemalung bedeckt waren, verdient das Bruchstück einer Röhrfußschale eine Erwähnung, die bisher aus der Theiß-Kultur nicht genügend bekannt war (Abb. 4, 7) (Raczky P., 1987a, Abb. 24, unten).

Im Verlauf der in *Berettyóújfalu-Herpály* durchgeführten Ausgrabungen (1977-1982) legten wir auch kleinere Abschnitte aus der horizontalen Siedlung der Theiß-Kultur frei, die sich nicht nur unter der Tell-Siedlung der *Herpály*-Kultur doch über die Grenzen des Tells weit ausdehnte (Kalicz N., Raczky P., 1984, 91). Die Siedlungen beider Kulturen kamen voneinander also unabhängig zustande. Unter den Keramikfunden der Theiß-Kultur kamen auch die gewöhnlichen schwarzbemalten

Bruchstücke aus Becher, Amphora und Röhrfußschale (*Kalicz N., Raczky P., 1984, Abb. 30, 10-13*). Unter den hier nicht vorgestellten Stücken befinden sich auch schwarzbemalte stilisierte Menschenfiguren. Die Keramik vertritt die ältere klassische Phase (II) der Theiß-Kultur.

Aus der Tell-Ausgrabung der Theiß-Kultur von *Vésető-Mágor* (Kom. Békés) waren bisher wenige Veröffentlichungen erschienen. Jedoch kennen wir aus diesem Fundort ein Schalenbruchstück mit stilisierter schwarzbemalten Menschenfigur (*Hegedűs K., Makkay J., 1987, Abb. 5, 5*).

J. Korek teilt zahlreiche schwarzbemalte Keramikscherben in der über die Theiß-kultur 1973 geschriebenen, nur 1989 veröffentlichten Monographie in erster Reihe aus *Kisköret* (Kom. Heves) und *Szerencs* (Kom. Borsod-Abaúj) mit (*Korek J., 1989, Kisköre: Taf. 2, 2, Taf. 7, 9, 11, Taf. 8, 6-7, Taf. 11, 11, Taf. 14, 18, Taf. 15, 7, 9; Szerencs: Taf. 16, 3-6, 10, 13, Taf. 17, 5-6, 10, Taf. 18, 1, 4, 7, 8*). Darunter scheinen einige Bruchstücke stilisierte menschliche Figuren darstellen (*Korek J., 1989, 33, 64, Taf. 15, 9*).

In den 90er Jahren kam ein Grabkomplex der Theiß-Kultur aus dem Inneren der Ortschaft *Bodrogkeresztúr*, (Kom. Borsod-Abaúj) zum Tageslicht, darunter befindet sich eine kleine Amphora, deren Halsteil mit schwarzer Streifenbemalung bedeckt ist (*Kalicz N., 1994, ähnlich zu der, die noch F. Tompa 1929 aus Tokaj veröffentlichte (Tompa F., 1929, Taf. 59, 4)*).

Die hier vorgestellten Exemplare weisen dazu hin, dass sich die oben erörterte schwarze Bemalungsart eigentlich in jedem Fundplatz der Theiß-Kultur auffinden läßt, deren Anfang in die ältere Phase dieser Kultur zurückreicht.

Eine andere Gruppe der hier erörterten spätneolithischen Schwarzbemalung befindet sich im nordöstlichen Karpatenbecken, sogar jenseits der Karpaten in Südpolen (Kleinpolen). In der nördlichen Tiefebene erscheint diese besondere Bemalungsart in Fundkomplexen, die kulturell einen gemischten Charakter aufweisen (*Raczky P., 1987b, 40-41, 43; 2002, 843*). Die Komponenten dieser Einheit stammten in erster Reihe aus der Herpály-, Theiß-, und, Lengyel-Kultur und aus der südpolnischen gemischten Lengyel-Stichband-Komplex, mit wechselndem Maß in den einzelnen Fundorten. In Ungarn befindet sich der deutlichste Fundplatz der erwähnten gemischten Kultur bei *Polgár-Csőszhalom dűlő, Fundort. Nr. 6*. (Kom. Hajdú-Bihar). *Raczky* erwähnt auch die aus der Vinča-Kultur entstammten Einfluß, und siebenbürgischen Elemente aus der Iclod-Gruppe (*Raczky P., 1987b, 40, 43; 2002, 843; 2005, 206-207*). Diese horizontale

Siedlung von riesiger Ausdehnung reicht genauso unter die Tell-Siedlung Csőszhalom, wie es in Herpály stattfindet. Der Unterschied zwischen den beiden Fundplätzen steht darin, dass solange sich in Herpály die frühe (II) doch nicht die formative Phase der Theiß-Kultur unter die Tell-Siedlung siedelte, waren die erste Siedler in Polgár unter der Tell-Siedlung durch die gleichzeitige Mischkultur vertreten. Es soll betont werden, dass sich die schwarze Streifenbemalung nur unter den Funden der horizontalen Siedlungen befindet, und aus den Komplexen der beiden Tell-Siedlungen (Herpály und Polgár-Csőszhalom) verschwindet.³ Dagegen sind die südlichen Tell-Siedlungen der Theiß-Kultur durch die Besiedlungskontinuität charakterisiert, jedoch erschien die schwarze Streifenbemalung unter den Funden der oberen Schichten nicht. Also bei den unteren Schichten kann man bemerken, auf welche Weise und wann sich die materielle Kultur änderte.⁴

Die Belege zur die Gleichaltrigkeit der oben erörterten Art der schwarzen Bemalung sind durch die gegenseitlich auftretenden charakteristischen Keramiken und anderen Funde, Befunde und Erscheinungen der anderen Kultur bestimmt. Neben dem Auftreten der Theiß-Keramik in Aszód, Herpály, Polgár und in den anderen Fundorten der gemischten Kultur in der nördlichen Tiefebene kann man auch der schwarzen Bemalung dieselbe Rolle zuschreiben, das die ritzierte Theiß-Keramik in Aszód spielte. In Polgár-Csőszhalom dűlő, Fundort Nr.6 (horizontale Siedlung). erschien die typische Theiß-Keramik ferner die besondere schwarze Bemalung, und die echten Lengyel-Keramiken ebenso, wie diese in Aszód zusammen auftauchten, doch lässt sich auch die polnische Stichbandkeramik in Polgár (gemischte Kultur) in Beachtung nehmen. In Herpály (horizontale Siedlung) befinden sich die ritzierten Theiß-Keramiken sowie die schwarze Bemalung von einer eigenartigen Art, doch fehlt die Lengyel-Keramik. Nördlicher, in Ostslowakei, erschienen die Theiß- und Lengyel-Keramik zusammen mit der schwarzen Bemalung, sowie die Stichbandkeramik von polnischen Typ, d.h. dieselbe in Polgár erfahrenen gemischte Kultur tauchte eigentlich in den gleichzeitigen Fundorten der Ostslowakei auf. Dieses sich verflechtende komplizierte Verbindungssystem kann überwiegend in der nördlichen gemischten Kultur, in einzelnen Fundplätzen der südlicheren Theiß-Kultur, wie z.B. in Öcsöd, sowohl in einem einzigen Fundplatz der Lengyel-Kultur in Aszód studiert werden.

In *Polgár-Csőszhalom dűlő*, Fundort Nr. 6 sind die meisten Erscheinungsformen der Schwarzbemalung vertreten manchmal mit kompliziertem Malmuster, wessen die unikalen schönsten Exemplare aus einem Opferbrunnen zum Vorschein gebracht wurden. Der Brunnen enthielt mindestens 86 rekonstruierte Gefäße (*Raczky P.*, 1987b, 39, 42; 2002, 2005, 205-209). Die große Masse der Gefäße enthält überwiegend kleine Amphoren (Abb. 5, 4), Becher in niedriger Zahl und einige miniature Gefäße. Die Fundumstände, sogar das Malmuster der Amphoren - wie darüber P. Raczky mehrmals berichtete, - weisen auf den nicht alltäglichen Brauch dieser Gefäße hin.⁵ Daneben befanden sich die gewöhnlichen Malmuster auf anderen Gefäßen, wie z.B. auf Röhrfußschalen in verschiedenen Teilen der horizontalen Siedlung (*Raczky P.*, 2002, Abb. 7, 3, Abb. 8. 8-12).

Unter den ostslowakischen Fundorten verdienen Ižkovce, Veľké Raškovce und Čičarovce eine Erwähnung, wo die erörterte schwarze Bemalung auftrat. Man kann die Informationen über die Funde der erörterten Fundorte an J. Vizdal bedanken. Der Fundort aus Ižkovce ist durch das Auftreten der Keramik von Typ Lengyel, daneben der Theiß-Keramik sowie die Stichbandkeramik von polnischem Typ zusammen mit der typischen schwarzen Streifenbemalung charakterisiert (*Vizdal J.*, 1986a, 305-312; *Kalicz N.*, 1994, Abb. 3-5). Vizdal stellte einen neueren Fundkomplex aus dem nahen Veľké Raškovce vor, der ganz ähnliche Funde enthielt, als er aus Ižkovce mitteilte (*Vizdal J.*, 1986b, 609-622)., doch unterscheidet sich das neue Fundmaterial von dem, das aus seiner älteren größeren Ausgrabung stammte (*Vizdal J.*, 1973, 11-227). Vizdal der junio teilte einen neueren Fundkomplex aus Čičarovce mit, wo die besonderen, kultischen Befunde ebenso eine gemischte Kultur repräsentieren als wir in andere Fundorten dieses Bereiches erfahren konnten. Unter den Funden herrschen die ritzverzierte Theiß-Keramik und die polichrome bemalte Keramik von Csőszhalom Typ (*Vizdal J.*, 1980; *Vizdal, M.*, 1993, 26-56). Darunter befinden sich einige Scherben mit schwarzer Streifenbemalung (*Vizdal M.*, 1993, Abb. 4, 2, Abb. 6, 6, Abb. 7, 2).⁶

Die in der Großen Ungarischen Tiefebene typische schwarze Bemalung gelangte in das nördlich der Karpaten liegende Gebiet, nach Kleinpolen. Aus mehreren Fundorten der Samborzec-Opatów-Gruppe sind die oben erörterte schwarze Bemalung nicht nur durch die besondere Maltechnik, doch auch durch Gefäßformen bekannt, denen Herkunftsstelle

im Karpatenbecken, in der großen Ungarischen Tiefebene gesucht werden kann. (Kamienśka J., Kozłowski J., 1970, 95, Abb. 23, 9-11, Abb. 24, 2,-3, 5-8; Kaczanowska M., et al. 1986, Abb. 2, 5; Kowlewska Marszałek A., 2004, 46, Abb. 5, 2, 4, Fotoabb. 1, 1-3). Die polnischen Autoren sind einverstanden darin, dass die Samborzec-Opatów-Gruppe eine gemischte kulturelle Einheit ist mit mehreren Komponenten. Die Hauptkomponenten sind durch die Stichbandkeramik und durch die Lengyel-Kultur vertreten, und dazu kommen noch die Theiß- und Herpály-Elemente. Bei der Samborzec-Opatów-Gruppe können wir eine verwickelte Verflechtung erfahren, deren Komponenten in fern liegenden Gebieten heimisch waren. Es scheint zweifellos zu sein, dass die Stichbandkeramik von Westen, vielleicht aus Böhmen und Mähren stammte. Auch die Herkunft einiger Gefäßformen und der schwarzen Bemalung ist klar: Diese gelangten aus der Theiß-Herpály-Csösthalm-Kulturkomplex nach Klempolen, d.h. aus dem Theißgebiet. Fraglich ist die Herkunftsgebiet der Lengyel-Komponent Als eine Möglichkeit würde sich das westliche Karpatenbecken für den Stammgebiet ergeben. Die andere Möglichkeit würde sich aus Böhmen und Mähren ergeben. Der östlichste und deutliche Fundplatz der Lengyel-Kultur ist Aszóđ, wo die frühklassische Phase dieser Kultur freigelegt wurde. Neben den typischen frühklassischen Formen und Verzierungen (Ritz und rote Bemalung) der Lengyel-Kultur erschien die ritzverzierte Theiß- und die schwarz bemalte Keramik in ziemlich hoher Zahl in Aszóđ. Daraus trat in Klempolen nur die typische ritverzierte und rotbemalte Lengyel-Keramik, doch fehlt die typische ritzverzierte Theiß-Keramik, gegensätzlich dazu, dass sich der Stammgebiet der Schwarzbemalung, sogar einige Gefäßformen, wie es oben schon erwähnt war, zweifelsohne im Karpatenbecken, innerhalb der Theiß-Kultur befindet. Die Theißelemente gelangten über Ostslowakei nach Klempolen, die durch viele Funde belegt sind. Meiner Annahme nach richtete sich ein Weg der Gemeinschaften der Lengyel-Kultur erstens gegen Ostslowakei (Ižkovce) und davon überwiegend durch die Täler der Flüsse von Hernád und Dunajec nach Südpolen In Ostslowakei trafen sich die Lengyel-Kulturelemente mit den der südlicheren Tiefebene und sie hätten die dort getroffenen südlichen Kulturelemente nach Norden mitgezogen. Eine andere Möglichkeit nach erreichten die Theißelemente erstens Aszóđ, und von Aszóđ ausgegangen, hätten einzelne Gruppen der Lengyel-Kultur auch Theißelemente über die Flußtäler der West-Slowakei mitgenommen. Dieser letztere westliche Weg

scheint bescheidener zu sein, als der östliche. Trotzdem können wir diesen westlichen Weg nicht ausschließen, da in Aszód das Gefäß mit ausgebauchtem Hals erschien, das ursprünglich in Südpolen heimisch war (*Kalicz N., 1974-1975, Taf. 8, 2*). Wir können jedoch voraussetzen, dass man die Kräftigkeit des östlichen Weges durch gegenseitige Verbindungen beweisen kann. Die ostslowakischen Fundorte als Knotenpunkte funktionierten. Von Süden erhielten die Bewohner dieses Gebietes die erörterten Theiß-Herpály-Csőszhalom-Kulturelemente, und von Norden gelangte zu ihnen die Stichbandkeramik zusammen mit den besonderen Formen der Gefäße mit ausgebauchtem Hals. Mehrere verzierte Keramiken der Stichbandkeramik, die Gefäße mit ausgebauchten Hals, einige Keramiken aus der Lengyel-Kultur erreichten auch Polgár-Csőszhalom dűlő, überwiegend in der horizontalen Siedlung (Fundort Nr. 6). Stark vereinfacht würde ich mich das Skelett des komplizierten Prozess so vorstellen.

Das Entstehungszentrum der schwarzen Bemalung ist also in der spätneolithischen Theiß-Kultur zu suchen. Die innere Gliederung der großen Perioden fand in der 80er Jahren statt. P. Raczky führte die Ausgrabung der kleinen Tell-Siedlung in Öcsöd (Kom. Békés) durch, die den Anlaß zur Periodisierung der Theiß-Kultur angegeben hatte (*Raczky P., et al. 1986, 103-125; Raczky P., 1987a, 61-83; 1992, 162-176; Kalicz N., Raczky P., 1987, 25-28*). Demgemäß wurde der Anfang des Spätneolithikums und der Theiß-Kultur in Ostungarn einfach bestimmt. Die Bestimmung wurde mit historischen Argumenten durchgeführt. Die Komplikation, die über den gleichzeitigen Brauch der Begriffe „Späte Szakálhát“ und „Übergangssphse“ zwischen der Szakálhát- und der Theiß-Kultur entstand, überzeugend verschwand. Raczky hat festgestellt, dass der Anfang des Spätneolithikums mit der Wendung zusammenfiel, wenn das Leben der Tell-Siedlungen in der südlichen Hälfte der Tiefebene begann. In Öcsöd war die unterste Schicht mit dem Anfang des Spätneolithikums und mit der Phase I der Theiß-Kultur identifiziert, wenn sich die klassische Theiß-Verzierung der Gefäße noch nicht entwickelte, nur begannen die Wurzeln entfalten (*Raczky P., 1987a, 64-68; 1992, 162-176, Abb. 1*). Die obere Schicht aus Öcsöd repräsentierte die Phase II der Theiß-Kultur, wenn sich die klassische Theiß-Formen und Verzierungen entwickelten (*Raczky P., 1987a, 64-68; 1992, 162-176, Abb. 2-8*). Diese Erscheinung konnte in meisten durchforschten Tell-Siedlungen festgestellt werden Raczky (1992, 182-176)⁷.

Die schwarze Bemalung war im östlichen Teil des Karpatenbeckens vom Frühneolithikum an in Verwendung. Ihre Blüte erreichte sie im mittleren Neolithikum im Verlauf des ganzen Lebens der Alföld-Linienbandkeramik und zwar während ihrer jüngeren Gruppen. Derselbe Prozess spielte sich parallel in Siebenbürgen. Alle Kulturgruppen besaßen eigene Bemalungsart, und die Farbe wurde vor der vollen Ausbrennung auf die Gefäßoberfläche aufgetragen. Der Musterschatz dieser Bemalungen waren einfach, meistens geometrisch. Das Rohmaterial des Farbstoffes ist noch nicht eingehend untersucht. Am Anfang des Spätneolithikums trat eine besondere Art der Schwarzbemalung und überwiegend im Gebiet auf, wo früher die Szakálhát-Kultur durch den Brauch der pastosen roten Bemalung charakterisiert war. Es scheint so zu sein, dass die mittelneolithische Maltechnik nicht als eine Vorlage der spätneolithischen Schwarzbemalung betrachtet werden kann. Nämlich trat ein neues Farbenmaterial, das Bitumen, auf, damit die Verwendung einer neuen Bemalungstechnik anfang.

Obwohl die ersten Zeichen der Bitumenbemalung in Nordungarn in der Spätphase der Bükk- und der Szilmeg-Gruppe sporadisch auftraten (Korek J., Patay P., 1958, 24-25, Taf 8, 12; Kalicz N., Makkay J., 1977, Taf. 116, 19, Taf. 135, 1-2, 6, 11 Taf. 175, 6-7, 9, 13), steht diese Erscheinung mit der oberen Feststellung nicht in Widerspruch. Nämlich, wie es oben ausgeführt war, bezeichnet die Entstehung der Tell-Siedlungen den Anfang des Spätneolithikums in der südlichen Hälfte Ost-Ungarns, und die nordungarischen Exemplare können damit in chronologische Parallele gebracht werden. Die eine deutliche Lehre der Freilegung von Öcsöd ist, dass sich die zwei Phasen der Theiß-Kultur klar absondern lässt. Aus den mehreren Argumenten erhebe ich nur die Problematik der schwarzen Bemalung, die von Raczky grundlegend bestimmt worden war. Demgemäß ist die Phase I der Theiß-Kultur durch eine besondere Art der Theiß-Kultur charakterisiert. *„Das angewandte Technik war die folgende: die gesamte Oberfläche des Gefäßes wurde mit Bitumen überzogen und in diese Schicht setzte man dann – aus geometrischen und m und mäandroiden Mustern geordnet – kleingeschnittene Stroh – bzw. Spreustücken ein.“* (Korek J., 1990, 61-62, Abb. 60-61). J. Csalog war der erste, der diese Ziertechnik entdeckte auf den Gefäßen aus Szegvár, wo diese Bemalungsart nur in den unteren Schichten auftrat (Csalog J., 1958, 108-110).⁸ In Öcsöd bestimmte Raczky die unteren Siedlungshorizonte mit Bitumenbemalung, und mit zerstückelten

Strohplättchen als Merkmal der frühen, formativen Phase (I) der Theiß-Kultur (*Raczky P.*, 1987a, 76, Abb. 8-9). Die oberen Siedlungshorizonte sind durch die einfachen, schwarzen Bemalungen der ausgebildeten, klassischen Phase (II) der Theiß-Kultur repräsentiert (*Raczky P.*, 1986, 107; 1987a, 82). Diese ausführte Absonderung lässt sich bei allen Tell-Siedlungen in Südungarn bestimmen. Einstweilen ist noch fraglich, ob was für ein Stoff zur einfachen, schwarzen Streifenbemalung verwendet war. Vermutlich wurde der Import von Bitumen wegen irgendeiner Ursache aufgehört, und eventuell aus irgendeinem lokalen Farbstoff wurde er ersetzt.

Eigentlich gelangte die jüngere schwarze Streifenbemalungsart in weite Gebiete, wie z.B. in die gemischte Kultur der nordöstlichen Gebiete Ungarns, Ostslowakei und Kleinpolens, sowie in den einzigen Fundplatz der Lengyel-Kultur, nach Aszód. Auch diese Erscheinung bestätigt die frühere chronologische Folgerung, demgemäß der ältere Zeitabschnitt der klassischen Phase (II) der Theiß-Kultur mit dem horizontalen Siedlung von Polgár-Csőszhalom dülő, Fundort Nr. 6, also mit der gemischten Kultur Nordost-Ungarns und Ost-Slowakei, ferner mit der Samborzec-Opatów-Gruppe sowie mit der frühklassischen Phase der Lengyel-Kultur (Aszód) gleichzeitig repräsentieren.

Es soll noch eine Besonderheit der einfachen schwarzen Bemalung erwähnt werden. Es sind die stilisierten bemalten Menschenfiguren die sich am häufigsten im Inneren der einfachen Schalen oder Röhrfußschalen und am Schulterteil der Amphoren befinden. Aus Ostungarn kennen wir die meisten Fundorte, wo die schwarz bemalten Menschenfiguren auftauchen. Aus *Öcsöd-Kováshalom* wurden mehrere fragmentarische Schaleninnern mit stark stilisierter schwarz bemalter Menschendarstellung veröffentlicht. Eine Darstellung stammt aus einer Röhrfußschale. Die Arme der Figur sind erhoben und an die rechte Seite des Kopfes ist ein bemalter Vollkreis gesetzt (Abb. 4, 7) (*Raczky P.*, 1987a, Abb. 24). In mehreren Schaleninneren kann man Hakenkreuzartige Motive erkennen (Abb. 4, 5, 8-9) (*Raczky P.*, 1986, Abb. 14, 6-7, 9-10; 1992, Abb. 4, 3, 5, 6). Aus *Hódmezővásárhely-Gorzsa* kam eine Schale im Inneren mit kreuzförmigem Motiv vor, und zwischen den Armen des Kreuzes befindet sich je ein Vollkreis (Abb. 5, 2) (*Horváth F.*, 2005, Abb. 10, 1). In *Vésztő-Magor* wurde das Bruchstück einer Schale veröffentlicht, in deren Inneren kam man eine stilisierte Figur anerkennen, beiderseits mit Vollkreis (*Hegedűs K., Makkay J.*, 1987, Abb. 5, 5). In *Szegvár-Tűzköves* wurde das Bruchstück aus einer Amphora, auf ihrem Hals mit

einer Menschenfigur gefunden, deren Arme neben den Körper abneigen, und über dem Kopf befindet sich eine Reihe aus Vollkreisen (Abb. 5. 1) (Korek J., 1987, Abb. 22, 1990, Abb. 76). Unter den aus Kisköre-Damm veröffentlichten Funden lassen sich Keramikbruchstücke entdecken, die in Schaleninnern fragmentarische Menschenfiguren darstellen (Korek J., 1979, Taf. 15, 7, 9).

Aszód ist der einzige Fundplatz der Lengyel-Kultur, wo nicht nur verschiedene schwarz bemalten Muster erschienen, doch kamen auch mehrere Schalenbruchstücke im Inneren mit stilisierten schwarz bemalten Menschenfiguren vor. Da aus Aszód nicht nur zahlreiche echte ritzierte Keramiken der Theiß-Kultur zum Vorschein gebracht wurden, bereicherte sich dieser Fundort auch mit dem Auftreten der Schwarzbemalung (Abb. 1-3). Darunter können wir stilisierte Menschenfiguren in den Schaleninneren anerkennen (Abb. 1, 1-8), die weiteren schwerwiegenden Beleg reichen dazu, was für enge Kontakte zwischen Aszód und der Theiß-Kultur in ihrer frühklassischen Phase (II) mit Frühphase der Lengyel-Kultur zustande kamen.

Über die Theiß-Kultur kennen wir, dass sich das Vorhergehende der einfacheren Schwarzbemalung in ihrer frühesten (I) Phase auftauchte. Es war die Bitumenbemalung und mehrmals die durch die eingelegten zerstückelten Strohplättchen verwirklichte Intarsia. Gute Beispiele sind über dieses Verfahren aus den Fundorten Szegvár-Tűzköves (Korek J., 1987, Abb. 5-7; 1990, Abb. 60-61), Battonya-Gödrösök (Abb. 6, 1-6) (Goldman G., 1984, Bild 8-10) und Öcsöd-Kováshalom (Raczky P., 1987a, Abb. 8-9) bekannt. Aus Öcsöd-Kováshalom teilt Raczky die schöne Rekonstruktion eines mit Bitumen und Intarsia verzierten Gefäßes mit (Raczky P., 1987a, Abb. 8). Obwohl noch von weiteren Fundorten Erwähnung über dieses besondere Verfahren stattfand, seien genügend diese erwähnten Beispiele zur Betonung, dass die hier vorgestellte Gattung der Bitumenbemalung ausschließlich als die eigene Auffindung der frühen Theiß-Kultur gewertet werden kann, und wie es oben erwähnt, gelangte dieses besondere Verfahren auch in weite Gebiete, also in die nördlichen späten Gruppen der Alföld-Linienbandkeramik, d.h. in die Bükk- und Szilmeg-Gruppe (Edelény-Borsod, Eger-Kiseged, Bükkaranyos-Földvár: Korek J., Patay P., 1958, Taf. 8, 12; Kalicz N., Makkay J., 1977, Taf. 116, 19, Taf. 135, 1-2, 6, 11 Taf. 175, 6-7, 9, 13).⁹

Infolge bisher unbekannter Gründe veränderte sich die Technik der Schwarzbemalung in der klassischen (II) Phase der Theiß-Kultur. Der dicke, schichtenartige Bitumenüberzug erlöschte, und stattdessen erschien die einfachere Technik mit dünnerer schwarzer Streifenbemalung. Dieses Verfahren war viel häufiger verwendet, als die frühere Bitumenbemalung mit der Intarsia. Die Voraussetzung können wir annehmen, dass wir als das Stammungsgebiet des Bitumens Siebenbürgen zu schreiben können (*Raczky P., 1987a, 75-76, 1990, 86-87*). Eventuell war die Gewinnung des Bitumenmaterials erschwert, oder es war möglich auch aus lokalen Stoffen die schwarze Farbe herzustellen. So veränderte sich die Maltechnik. Die einfachere Schwarzbemalung verbreitete im Nordostungarn weit außerhalb des Gebietes der Theiß-Kultur. So erschien diese die Phase II der Theiß-Kultur charakterisierende Bemalungsart in der gemischten Kultur in Ostslowakei sowie in Kleinpolen, und wie erwähnt war, Aszód ist der einzige Fundort der Lengyel-Kultur mit dieser besonderen Malgattung, in der die Absicht der Darstellung von Symbolzeichen höchstwahrscheinlich ist.

Man kann äußern, dass die mit schwarzer Bemalung verzierten Keramiken nicht zur Befriedigung der alltäglichen Verwendung dienten. Nur einige Argumente erwähne ich um den besonderen Charakter diese Bemalungsart zu betonen. Darunter soll die allgemeine Seltenheit der schwarz bemalten Keramik erheben. Nämlich war die schwarze Farbe kein typisches Verfahren zur Bemalung in der Theiß-Kultur. Die gewöhnliche Bemalung diente nur zur Ergänzung der allgemeinen Ritzverzierung, der Keramik, und die Farbe war am häufigsten rot, seltener gelb und weiß. Diese Farben wurden höchstwahrscheinlich von der vorausgehenden Szakálhát-Kultur geerbt.

Die Besonderheit dieser Gattung lässt sich nicht nur mit der Farbe erhöhen, doch auch mit den Malmotiven. Daraus sind die besten Beispiele, die Schalen, die im Innern stilisierte Menschenfiguren oder derartigen Darstellungen tragen, sowie auch die Amphoren, auf deren Schulter auch schwarz bemalte Menschendarstellung sichtbar ist. Das beste Beispiel zum Beweis der nicht alltäglichen, doch kultischen Verwendung ist ein Amphorenfragment aus Öcsöd, das auf der Schulter ein stilisiertes Gebäude, - wie es Raczky voraussetzt - ein Heiligtum und andere symbolische Zeichen (darunter erhebe ich zwei Menschenfiguren und mehrere Reihen aus Vollkreisen!) trägt (abb. 4, 1) (*Raczky P., 1986, 104-105*;

Abb. 7, 2; 1987a, 77-78, Abb. 28). Deshalb kann man nicht überraschen, wenn auch die besonders komplizierten Bemalungsmuster auf den Amphoren und einzelnen Röhrfußschüsseln als Simbolzeichen betrachtet werden können. Besonders passt diese Annahme bei den Amphoren aus einem Opferbrunnen aus Polgár, Fundort 6 (Abb. 5, 4). Ähnlich verzierte Amphorenbruchstücke befindet sich auch unter den Funden aus Aszód.¹⁰

Zusammengefaßt können wir feststellen, dass die Theiß-Kultur ein Zentrum nicht nur der gewöhnlichen Materialkultur doch auch der geistlichen Kultur bildete, deren Ausstrahlung in weiten Gebieten, hauptsächlich in Aszód, im Grenzenfundplatz der Lengyel-Kultur zur Geltung kam. Ein Grund, dass sich in Aszód so viele aus der Theiß-Kultur stammende Erscheinungen der materiellen und geistliche Kultur befinden, können wir damit erklären, dass Aszód im Kreuzweg der wichtigsten Kontaktskanale des Karpatenbeckens lag und die engste Kontakte der Lengyel-Kultur baute sich mit der Theiß-Kultur.

NOTES

1. Die österreichischen Forscher die Phase IaO auf die formative Phase der Lengyel-Kultur brauchen, da sie die Benennung: Phase Ia auf die frühklassische Phase, (wie z. b. Aszód) beziehen: Ruttkay-Stadler 2006.
2. Früher war die älteste oder formative Phase (I), als die spätest Phase der Szakálhát, oder Übergangszeit zwischen Szakálhát und Theiß betrachtet werden.
3. Obwohl die schwarze Bemalungsart in der Herpály-Kultur vorherrschend war, wich sie jedoch grundlegend von der schwarzen Bemalungsart der Theiß-Kultur ab.
4. Darüber brachten die neueren ausgezeichnet dokumentierten Ausgrabungen besonders gute Beispiele aus Öcsöd-Kováshalom und Hódmezővásárhely-Gorzsa (Raczky P., 1986, 103-125; Raczky P., 1987, 67-83; Raczky P., 1992, 262-176? Horváth F., 1982, 201-222; Horváth 1987, 31-46; Horváth F., 2005, 51-83
5. Dias besondere MAlmuster der Amphoren befindet sich auch in Aszód auch auf Amphorenbruchstücken, (z. B. aus dem Objekt 59/α, die hier nicht abgebildet sind.
6. Leider kann man den Fundort Čičarovce nicht klar beurteilen. Nämlich scheint die Fundstelle zur Csőszhalom-Gruppe gehört sein. Obwohl in Csőszhalom , innerhalb der Tell-Siedlung treten die Keramiken der Theiß-Kultur, doch bei weitem nicht in solche Menge al in Čičarovce, wo die Theiß-Scherben ungefähr eine Hälfte der verzierten Keramiken ausmacht. Es ist deshalb auffallend, da wo die Theiß-Keramik als fremder Import, wie in Csőszhalom, Herpály und Aszód auftaucht, keinesfalls erreicht ihre Zahl., die wir aus Čičarovce erfahren. Deshalb kam mir der Gedanke, dass in Čičarovce, die Theiß-Kultur nicht gleichzeitig gewesen wären. Früher lebte dort die Theiß-Kultur und, später siedelte die Csőszhalom-Gruppe auf die frühere Siedlung und daraus entwickelt die Mischung. Daraus folgend könnten die

- schwarzbemalte Scherben zur Theiß-Kultur gehören, da auch aus der Tell-Siedlung in Csöszhalom befinden nicht die schwarz bemalten Scherben (Kalicz N., 1994, 266).
7. Daraus bildeten nur zwei ganz südliche Tell-Siedlung (Tápé-Lebő und Battonya-Parázstanya), eine Ausnahme, die sich mit ihrer Entwicklung zum südlicheren, Gebiet anschlossen.
 8. Das Material dieser Farbe war früher als Birken- oder Buchenharz gedacht, doch wurde es durch die grundlegende Untersuchung als Bitumen bestimmt. Über den Ursprungsort des Bitumens wurde die Meinung mitgeteilt, dass dieses Farbenmaterial aus Siebenbürgen stammte (Korek J., 1990, 61).
 9. Man kann sich vorstellen, dass die Verwendung des Bitumens schon früher, bei der Alföld-Linienbandkeramik im Gebrauch war, entwickelte sich dort ein anderes Verfahren der Schwarzenbemalung.
 10. Hier nicht dargestellt.

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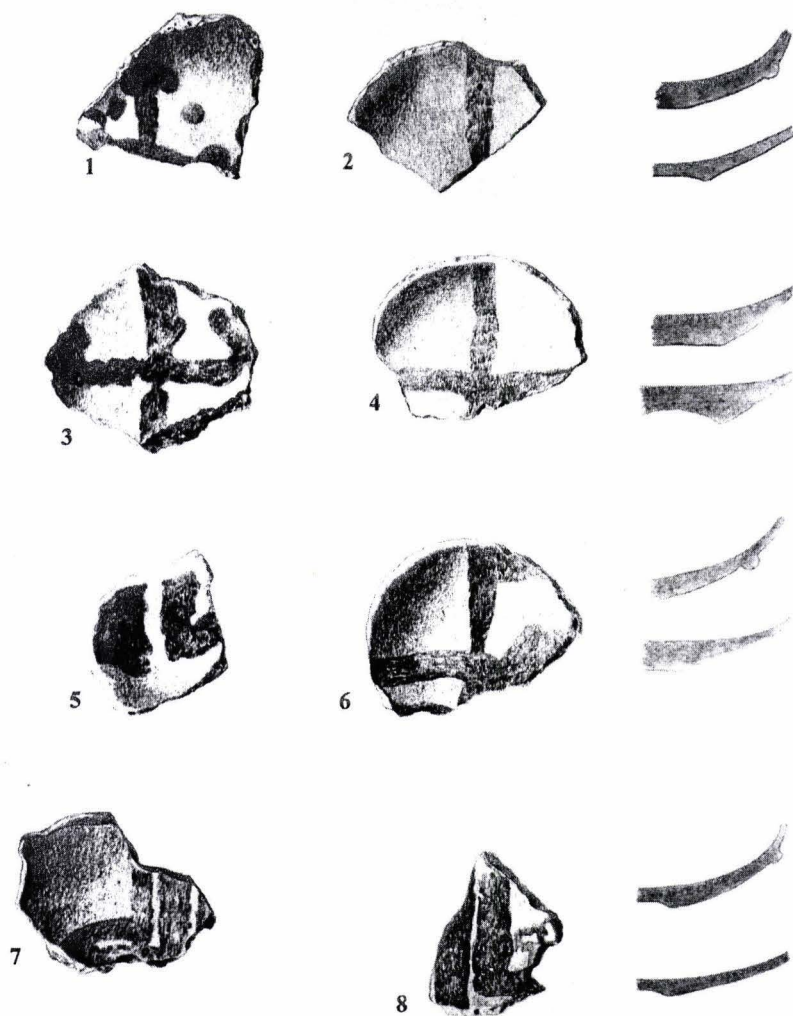


Abb. 1: Aszód. 1-8. Lengyel-Kultur, Schalenbruchstücke mit schwarzbemalter stilisierter Menschenfigur. Aus den Ausgrabungen von N. Kalicz

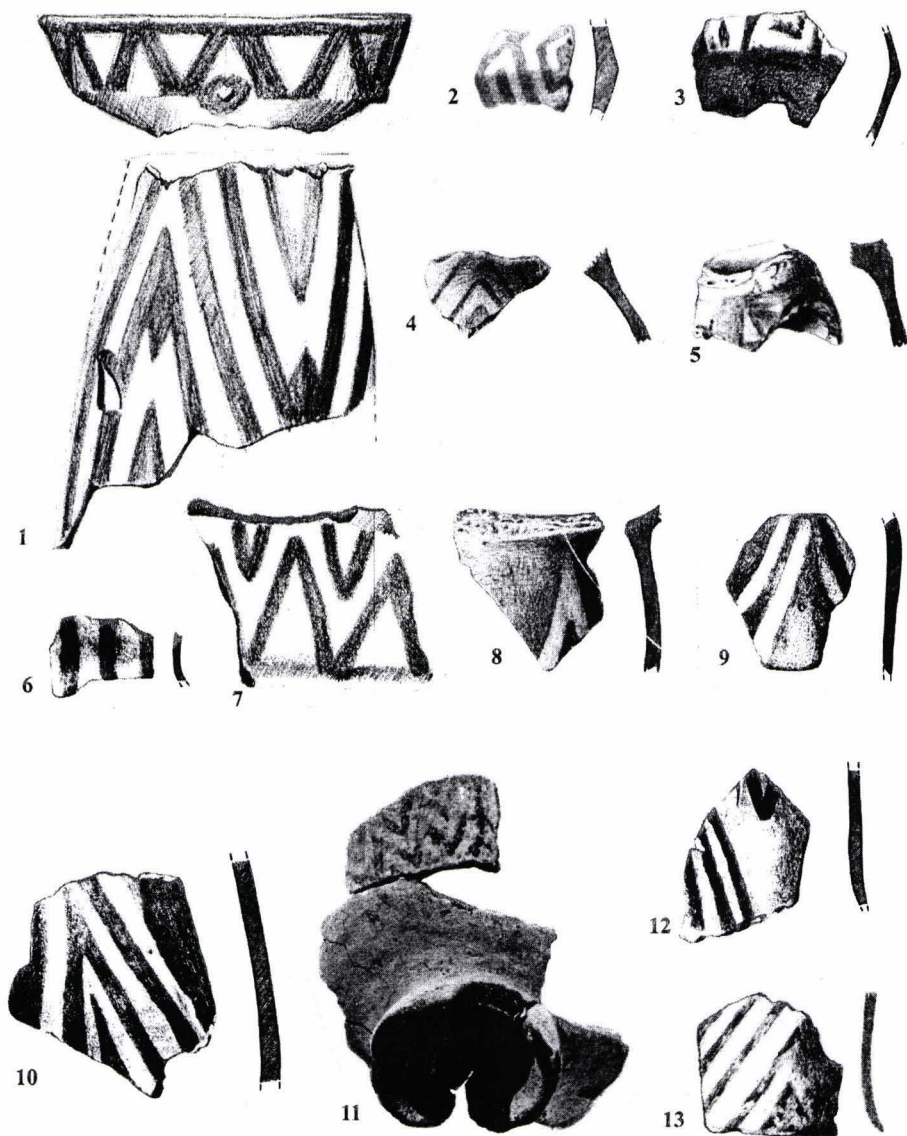


Abb. 2: Aszód. 1-12. Lengyel-Kultur. Verschiedene Gefäßbruchstücke mit
Schwarzbemalung. Aus den Ausgrabungen von. N. Kalicz

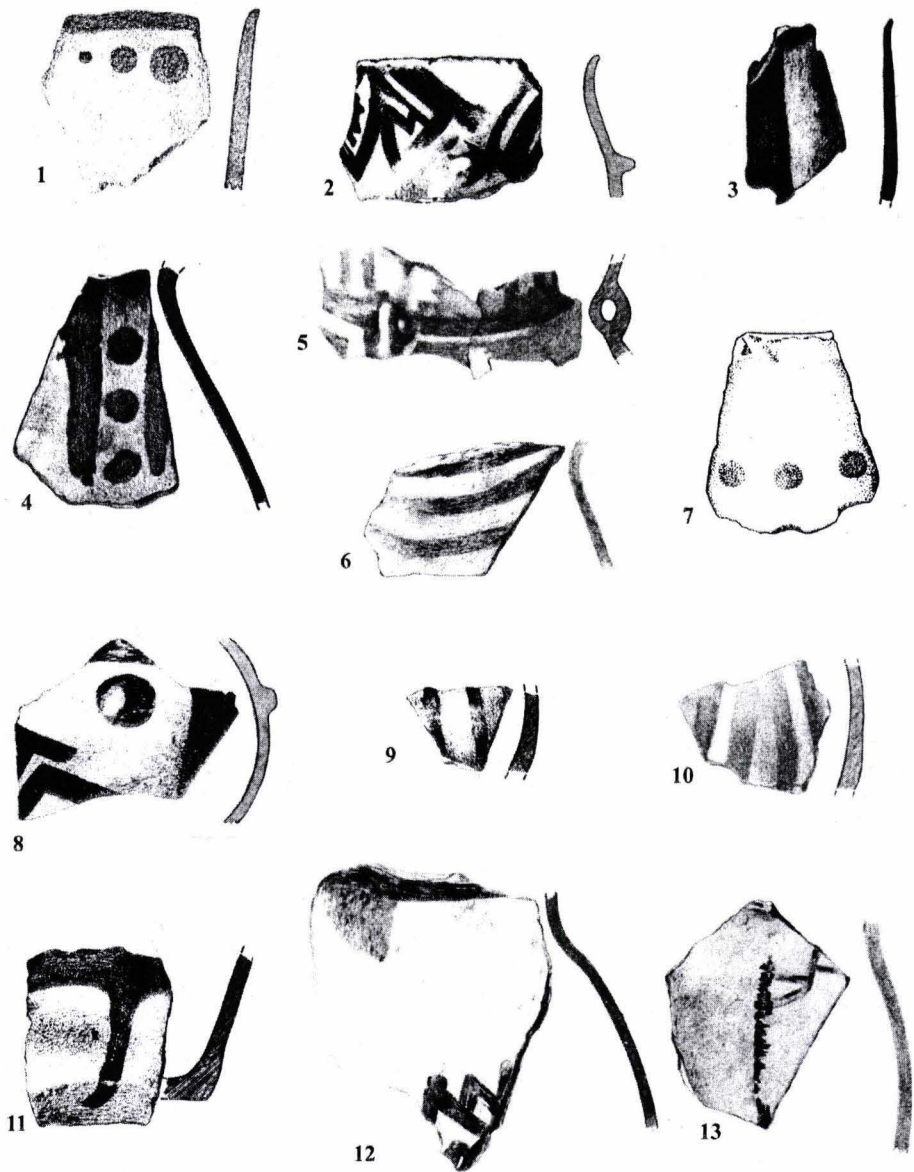


Abb. 3: Aszód. 1-13. Lengyel-Kultur. Verschiedene Gefäßbruchstücke mit Schwarzbemalung. Aus den Ausgrabungen von N. Kalicz

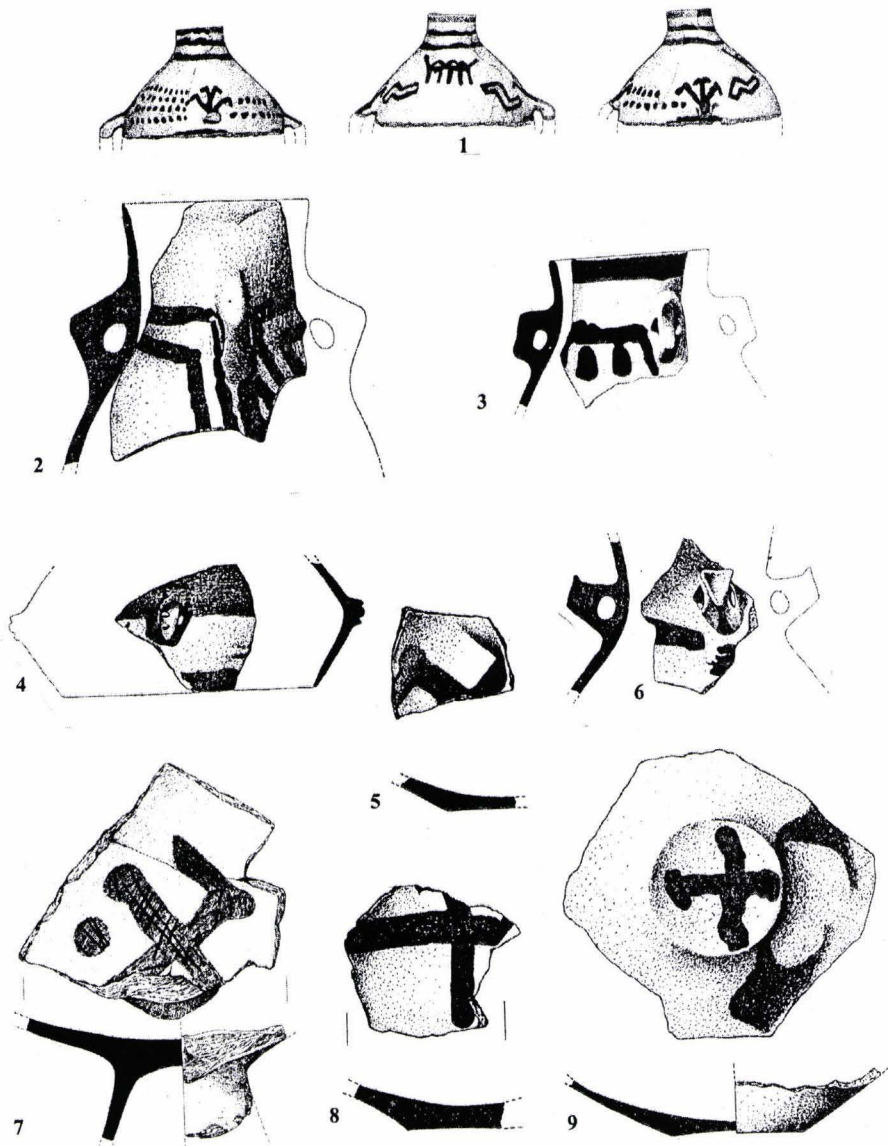


Abb. 4: Öcsöd. 1-9. Theiß-Kultur. Verschiedene Gefäßbruchstücke mit Schwarzbemalung, darunter Schaleninnern mit stilisierten Menschenfiguren. 1. 7-9. Nach Raczky P., 1987a, 1, 4-6. Raczky P., 1992.

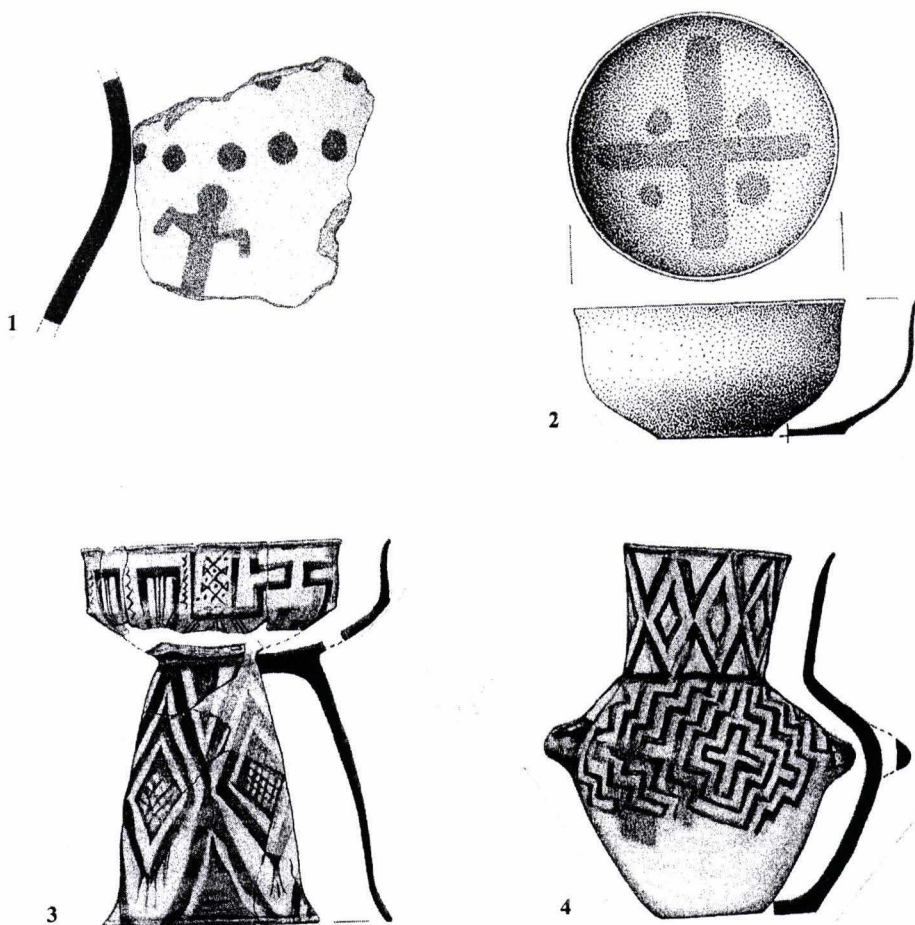
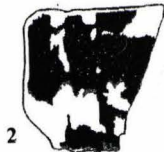


Abb. 5: 1. Szegvár-Tűzköves, 2. Hódmezővásárhely-Gorzsa; 3-4. Polgár-Csőszhalom dűlő, Fundort Nr. 6. Gemischte Kultur, 1. Korek J., 1987, 3. Horváth F., 2005, 3-4. Raczky P., et al. 2002



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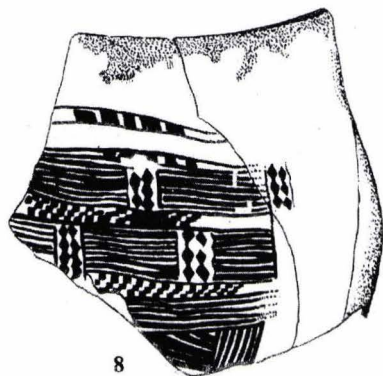
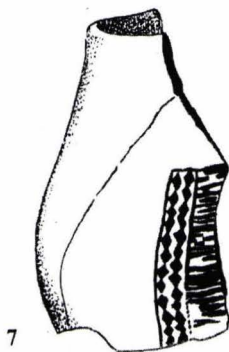
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THE INTERRELATIONS BETWEEN BURIAL ORIENTATIONS AND ASTRONOMY IN THE BALKAN REGION

Alexandra Comşa

Keywords: *Balkan Region, burial orientations and astronomy*

Purpose

The paper is trying to point out the existence of a possible correlation between the position of the skeletons in the Neolithic time of Romania and the Balkan region and the Sun. Most of the large cemeteries considered here, with numerous skeletons, were excavated some decades ago (in the 50's and 60's of the 20th century) so that, the only instrument employed in the measurements was a simple compass. It means that no precise figures could be given, with regard to the orientation of the individuals under study; this is why some biases could appear. Even today, we have very few possibilities to determine the exact position of the skeletons in a necropolis; some of the possible causes being also the pressure of the earth upon the bones, which could somehow modify their initial position. In certain cases, some disturbances could be also determined by the landslides, floods or earthquakes, being known, for a long time, that Romania is situated into a region with high seismic risk. None at the least, the subsequent human intervenes, plundering for instance, have changed the initial situation.

That's why there are some controversies regarding the issue of the skeletons orientation to the Sun. Some scholars considered it as a true fact (*Cantacuzino Gh., Morintz S., 1968*), while others were reluctant to this hypothesis (*Báčvarov K., 2002, 260*). Yet, in Central and Eastern Europe, the mentioned issue is considered to be very topical today (*Lichter C., 2001*).

Introduction

Astronomy is a very old science. People were constrained to be aware of some natural phenomena or movements of the stars and planets in order to be better adjusted to the nature. Economic activities of the human communities, like agriculture, cattle breeding, traveling, some ceremonies, feasts, customs and religious rituals, all depended upon the big cycles of the nature.

For an in-depth study with regard to the archaic populations, at the limit between archaeology and astronomy, a border science appeared, being called archaeo-astronomy. Out of the elements provided by the archaeological investigations, it tempts to reconstruct, as much as possible, the beliefs, myths and customs of the old civilizations. Such evidences, in Europe and elsewhere, are documented, among others, by temples and sanctuaries finds, which point out the importance of the Sun, Moon and some series of planets and constellations, for the archaic populations.

On the territory of Romania it is known, for instance that, during the Neolithic times, the Sun has played an important role for the people of that time.

The Sun was guiding both life and death of the old societies (*Comşa A., 1995a, 73-77; Comşa A., Schuster C., 1995, 279-288; Schuster C., Comşa A., 2001, 235*). Agriculture and cattle breeding, main occupations at that time, depended upon various elements of the nature, including the Sun and the Moon. The beliefs and customs of those communities were connected with the principle of life, in many situations rendered by the Sun. The Neolithic societies also considered that the end of the life here, on the Earth, would transfer people, possibly after a longer or shorter journey, into a realm where another life would begin. The dead individual would have had the same social status he detained during his life and this is why, he was accompanied by all kind of objects, implements or adornments for personal use (*Comşa E., 1995b, 46-54; 2005*). Of course, there were also burials without inventory, but such a situation may be determined by other factors and does not reflect a change of beliefs.

Besides those usual items, we should notice the use of the red ochre for painting the entire body of the dead or just parts of it, being probably considered that, its red color, similar to the one of the blood, would help the people in the after world to reach easier their new "life".

Another interesting aspect is the lamp placed in the burials, as found at Vărăști-Grădiștea Ulmilor, in Southern Romania, and Ruse, in Northern Bulgaria, probably to provide the dead with the light, during their travel to the after world (*Comșa E., 1995a, 114, 124*).

As we will further notice, some communities buried their dead in a flexed position, with the individuals laid on their left or on their right side, while others interred their subjects with their supine body. This is an important element of the funerary ritual, which sometimes helps the archaeologists to distinguish certain phases of evolution, or even an entire material culture. There are also archaeologists who made a connection between the sex of the individuals and the flexed position of the dead, laid on their left or right side. Yet, this hypothesis is not being confirmed for all civilizations. For instance, the bearers of the Bodrogkeresztur and Tisa Cultures, whose ranges cover some regions of Romania and Hungary, buried the men flexed on their right side, while women were flexed on their left side.

With regard to the flexed position, there are two trends of interpretation: the first one considered that the dead person would be laid so in order to imitate the sleeping individual, the same as death looks similar to the sleep. When they would wake up, in the after world, the dead would start a new life (*Comșa E., 1995b, 125-126*). There are necropolises, even in Romania, where some skeletons are flexed on a side, with their hands under the head, imitating the sleeping position.

The second interpretation maintained that the flexed skeletons would imitate the position of a child in its mother's womb. In this situation, the inhumation would mean a return to the Mother Earth and in the Romanian Neolithic inhumation is predominant (*Comșa E., 1987, 150; 1995a, 262*).

Depending upon the degree of flexing, there are skeletons with a slight, moderate or stressed flexing. It seems that the last position could have been obtained just by binding up the cadaver.

We find appropriate to mention here that the flexed skeletons appear in the countries west and south of Romania, while the supine ones were to be found in the Northern Black Sea coast steppes, namely in those countries east of it. Romania is in the area of interference between those two funerary rituals (*Comșa E., 1974, 153*).

In this context, we should also discuss about the burials. In the first phase of the Neolithic, they were often placed in the settlement, between

the dwellings, or under their floor. Towards the Middle Neolithic, it is to be noticed that burials tempted to be grouped, moved towards the periphery of the settlement and finally separated from the place of the living and assembled into necropolises. Yet, this phenomenon has gradually occurred and those two manners of interment coexisted for some time (*Comşa E., 1960a, 22, 28-30*).

As I already stated above, the entire ritual of burying the dead was very important for the community and needed to be fully and correctly accomplished in all details because, otherwise, the soul of the deceased would return to the living for taking revenge upon the other members of the society.

One of the important elements that needed to be taken care of was the orientation of the cadaver. There are two main interpretations regarding the orientation of the burials: one states that it points to the direction of the sunrise and the other one maintains that it shows the region of origin for the respective community. The first theory is backed up by a statistic comparison made among the Neolithic necropolises of Romania that emphasized that most of the burials containing skeletons flexed on their left side had an orientation which varied between NNE 25 degrees and ESE 120 degrees. There were just two exceptions at the end of the Boian Culture (4th millennia) (*Haşotti P., 1997*), namely the finds at Fărcaşu de Sus, in Oltenia, Southern Romania, with a WSW orientation. The skeletons flexed on their right side usually had their skull towards ESE 115 degrees and south 180 degrees. In this case, there were also few exceptions, some individuals being orientated between WSW and west or, more seldom to the WNW and NW (*Comşa E., 1987, 150*).

Regarding the second hypothesis, if we consider that the orientation of the skeletons would always show the origin of the community, it could mean that in a necropolis, the dead came from different regions, without having connections with each other. Still, such an idea is not to be neglected as later on, in the Bronze Age, we find situations when allogeneous people have buried their dead with the same orientation and really pointing to their region of origin, as it happened at Căndeşti (Vrancea County), Poiana (Galaţi County), both in the romanian province of Moldova, or in other archaeological sites (*Florescu M., Florescu A., 1983, 113*).

Regarding the orientation of the Early and Middle Neolithic burials in South-Eastern Europe, we have 36 examples at our disposal, but for just 27 of them the orientation could surely be established (*Lichter C., 2001, 42-43 and Figure 9*). It could be observed that a uniform repartition of the dead orientation appeared. An interesting case is Trestiana (Criş Culture) (*Necrasov O., Antoniu 1978; 1979; Popușoi E., 1980; 1981; 1992; Comșa E., 1995c, 249-251; Lichter C., 2001, 43, 432*) where, out of the total number of 11 burials with 13 individuals, it could be determined that the main axis of orientation was NS (5 cases), respectively SN (3 cases). Exceptions were two dead, one orientated SE-NW and the other E-W.

According to some specialists, regarding the general orientation for the complex Criş-Starčevo-Körös from Romania, Hungary, Serbia and Bulgaria, nearly half of those deceased were buried on the axis EW (*Lichter C., 2001, 175 and Figure 82*). Just a quarter of the dead had their head towards direction W.

In Romania, it could be observed that the bearers of the Starčevo-Criş, Ciumesti, Dudești, Linienbandkeramik, Tisa, Vinča-Turdaş and Vădastra cultures had burials with various orientations, inside the settlements, with a flexed position of the deceased, either on its left or on its right side of the body. In some cases, the orientation of the dead could not be established, due to the disturbances of the burials (*Comșa E., 1974, 113-122*).

The necropolis at Cernica (Figure 1-3), in Muntenia, near Bucharest, in Southern Romania, or better said its area comprising the supine skeletons, was initially assigned to the Bolintineanu phase of the Boian Culture. More recently, they were reconsidered as belonging to the Dudești Culture (*Comșa E., Cantacuzino Gh., 2001, 194-198, 200*). The members of the respective community used to bury their dead on directions situated mostly between WSW 260 degrees and WNW 200 degrees. The flexed skeletons were assigned to the Boian Culture (*Comșa E., Cantacuzino Gh., 2001, 194-198*) and they were usually orientated towards SW 230 degrees and West 270 degrees. The resemblance existing between those two limits of variation for the orientation is probably due to the fact that both burial types have belonged to some partly related communities, a fact which explains some common funerary customs. At the same time, it is explainable the difference between the position of the skeletons (supine and flexed) because, the population with extended skeletons had a southern origin, while the one with flexed skeletons emerged out of the former, but

in strong relation with some communities from Eastern Romania (Comşa E., Cantacuzino Gh., 2001, 164-165, 189-190).

During the excavations carried out at Radovanu, Călăraşi County, in Muntenia, Southern Romania, 26 Boian burials have been found, dated back in the transitional period from the Boian to the Gumelniţa Culture (Comşa E., 1995b, 259). Their skeletons had as main orientation the East cardinal point (with the usual variation, between ENE and ESE). They were flexed on their left side and seldom on their right side. It is interesting to notice there a custom that is not only specific to the Boian Culture, but also to other civilizations of the Neolithic time. Some skeletons, in a stressed flexed position, were evidently tied up before being buried. By analogy to some situations described by ethnologists, it is presumed that, after being tied, the dead was put in a kind of sack and afterwards buried (Comşa E., 1990, 108). This is a possible explanation for those individuals found with their face downwards, but spread among the other usual burials in the cemetery. The skeletons laid on their left side were mainly orientated towards east, while those on their right side towards SW. We should also notice the slight variation between their orientations. For four of them, the distance from the East point is very low (burial 1 = ESE-93 degrees, burial 2 = 68 degrees, burial 3 = ESE-102 degrees and burial 4 = ENE 87), fact which is considered to indicate that those burials were made early in the morning, at the sunrise (Comşa E., 1990, 108).

Another interesting Boian necropolis was found at Popeşti-Vasilaţi, Călăraşi County (Figure 4-5), in Muntenia, Southern Romania. Out of a necropolis that was much affected by various constructions and works, 16 Neolithic (Boian Culture) and 1 Bronze Age burials were rescued. Fifteen skeletons were flexed on their left and just one (Burial 5) is on its right side. The main orientation of the burials was to the East (Şerbănescu D., 1999, 58-60).

For the Gumelniţa Culture (4th millennium) (Haşotti 1997), the orientation was established for 188 burials (Lichter C., 2001, 118-119). The main axis was E-W, with slight deviations towards NE, respectively SE. Therefore, at Ulmeni the deviations were found between 48 degrees NE and 90 degrees E. At Vărăşti B, more than 90% of the burials were placed between 53 degrees NE and 121 degrees ESE. At Radovanu the deviations were to be found between 78 degrees ENE and 112 degrees ESE.

At Vărăști-Grădiștea Ulmilor (Figure 6), belonging to the Gumelnița Culture, the individuals were usually orientated to NE and SE, thus, in the main direction East. Yet, there were also individuals, lesser in number, with their head towards NNW or other directions. We mention here that 4, out of those 126 skeletons, belonged to the period of transition from the Boian to the Gumelnița Culture and were laid on their left side, with a similar orientation (burial 10 – ENE 78 degrees, burial 22 – ESE 95 degrees, burial 61 – ESE 95 degrees, burial 121 – ENE 72 degrees), with a variability of just 23 degrees. Four other skeletons were dated in more recent time sequences. The other 118 burials contained mostly skeletons flexed on their left side.

After analyzing the existing information, it could be inferred that the necropolis comprised two groups of skeletons with similar orientations, between which a smaller group interfered. This fact, namely the presence of those two larger groups, are considered as possibly corresponding to different evolution stages of the Gumelnița Culture in the region, which resulted in small changes of the funerary ritual (*Comșa E., 1995a, 111-112*).

Another important group of 9 burials of the Gumelnița Culture were discovered at Dridu, Ialomița County, in Muntenia. Unlike those from Vărăști-Grădiștea Ulmilor which were mostly flexed on their left side, 5 of those uncovered at Dridu, were on their right side and 4 on their left, so that, more than half of them were laid on their right side. There were also differences with regard to the orientation of the dead. The skeletons from Vărăști, laid on their left side had their skull on directions which varied between ENE 72 degrees and ESE 117 degrees, while those on their right side had various orientations, between NNE 60 degrees and WNW 290 degrees. At Dridu, a similar situation could be observed, in the sense that the skeletons laid on their left side have a low variability in orientation (between NNE 23 degrees and ENE 67 degrees), while those flexed on their right side have their skulls between ESE 100 degrees and WSW 246 degrees.

In Bulgaria, among others, two necropolises of the Gumelnița (= Ruse) Culture were analyzed. Hence, at Ruse, the skeletons were flexed; the individuals laid on their right side being prevalent (28 out of 36). It happened that also, those flexed on their left side were orientated on directions close to E (11 out of 20). The skeletons on the right side had their skull with main direction S (8 towards SE, 13 towards S and 7 SW).

At Kubrat (Figure 7), another Gumelnița necropolis in Bulgaria, out of those 22 skeletons, 19 were laid on their left side and 3 on their right side, pointing to a similar situation to the one at Vărăști-Grădiștea Ulmilor. The resemblances between those two cemeteries also persist with regard to the orientation of the skeletons, those at Kubrat being mostly arranged with their head on the main direction East.

We ought to mention here that, as much as the funerary ritual is concerned in Romania, there were no differentiations between the burials of men and those of women, fact which made us believe that the woman was equal to man as concerns her social-economic status. Also, the children burials were spread in the necropolis, among those of grown up people and had the same depth (Comșa E., 1960a, 27).

An interesting conclusion that results from the data regarding the Gumelnița Culture in Romania and Bulgaria, is the one that we find a direct correlation between the position of the skeletons and their orientation. Those laid on their left side had their skull mostly towards NE and SE, while those laid on their right side had a SE and SW orientation (Comșa E., 1960a, 380).

As concerns the orientation in the Varna Culture from Bulgaria, which is part of the large complex Kudžadermen-Gumelnița-Karanovo VI in South-Eastern Europe, there are data for 484 cases in which there were also included the cenotaphs and disturbed inhumation burials (Lichter C., 2001, 96-98). In the latter case, the orientation could be established by analyzing the burials pits. A number of 380 burials from Varna I, Durankulak and Devnja had a percentage of 55% orientation to the north, over 20% to NNE and 17,5% to NE. Just 7.5% have their head towards NNW (Lichter C., 2001, 96 and Figure 40). Interestingly, 195 inhumations have a deviation of just 1 degree from the main axis of orientation, namely 80% of the inhumed at Durankulak were placed between 330 NNW and 17 degrees NNE, while 90% of those buried at Varna I between 8 degrees N and 72 degrees ENE (Lichter C., 2001, Figure 41).

Returning to Romania, we ought to mention that, for the necropolis at Ostrovul Corbului, belonging to the Sălcuța Culture, the data regarding the orientation is known for 49 cases (Lichter C., 2001, 143 and Figure 67). Out of these, 21 were orientated on the axis ENE-WNW 17 EW and 7 ESE-WNW. There were also three major exceptions, namely those with W-E orientation.

For the Iclod group, the orientation could be established for 56 burials (Lichter C., 2001, 228 and Figure 69). Three quarters of the individuals were placed on the axis W-E, with some deviations towards WSW and WNW. More significant deviations from the rule were found at Iclod B, in Transylvania, Northern Romania, where, nearly one fifth of the dead were placed on the axis N-S.

Conclusions and remarks

The archaic communities probably believed that the star who brings life and heat on the Earth, would bring it also in the after world, where every aspect of the souls existence should be the same like in the usual life on the Earth. The necropolis was the realm of the dead, the same as the settlement was the one of the living. The Sun was dedicated a special cult, this practice being frequent among the populations who had agriculture and cattle breeding as main occupations, the way they were in the Neolithic times of the Balkan region (*Cantacuzino Gh., Morintz S., 1968, 17-20*).

In general, we could say that many Neolithic communities in South-Eastern Europe have buried their dead with their head orientated towards East, the cardinal point of the sunrise. Some deviation from the ideal West-East axis, as I already stated above, are due to external factors but, mostly to the seasonal variations, determined by the moment when the dead were buried. In the seasons when the Sun rose earlier, the deceased were closer to the North cardinal point. Yet, in winter, when the Sun rose later, the individuals were closer to the South cardinal point. It is understandable that the interment was not performed with a compass in hand, the main reference mark being the Sun. This assertion is not valid just for the Neoeolithic of the South-Eastern Europe but to the most archaic civilizations from Europe, Asia, Africa and Americas.

The exception from the general rule of interment point out, according to the archaeologist specialists, unusual phenomena, connected to the social and religious life of those people. Probably, the respective deceased were not totally adjusted to the community or, they suffered of illnesses that made them undesirable for the society. Even today, in some archaic communities, those with mental sickness for instance, or those who are black magic practitioners, are buried outside the cemeteries or, if accepted

inside them, they have another funerary ritual and a restrained area for being buried (usually, at the limit of the cemetery).

From the viewpoint of the physical anthropology, there is no differentiation with regard to the sex and age of the individuals buried on the West-East axis. The only aspects could be determined by the presence of the inventory or, in certain cases, by the position of the corpse (on its left or right side). This aspect is also valid, in most of the cases, during the subsequent times in the metal epochs (Comşa A., 2001; 2003)

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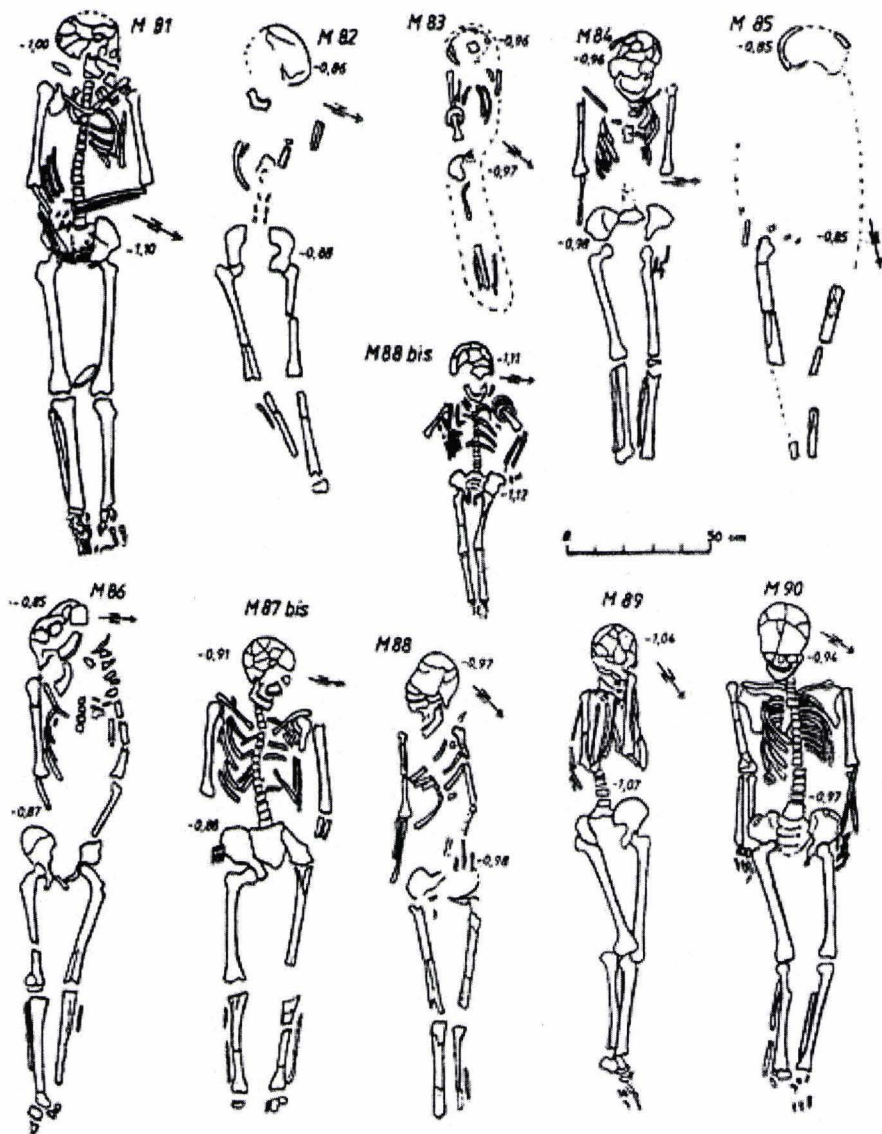


Fig. 1: Supine skeletons from Cernica (M = grave), Romania (after Comşa, Cantacuzino 2001).

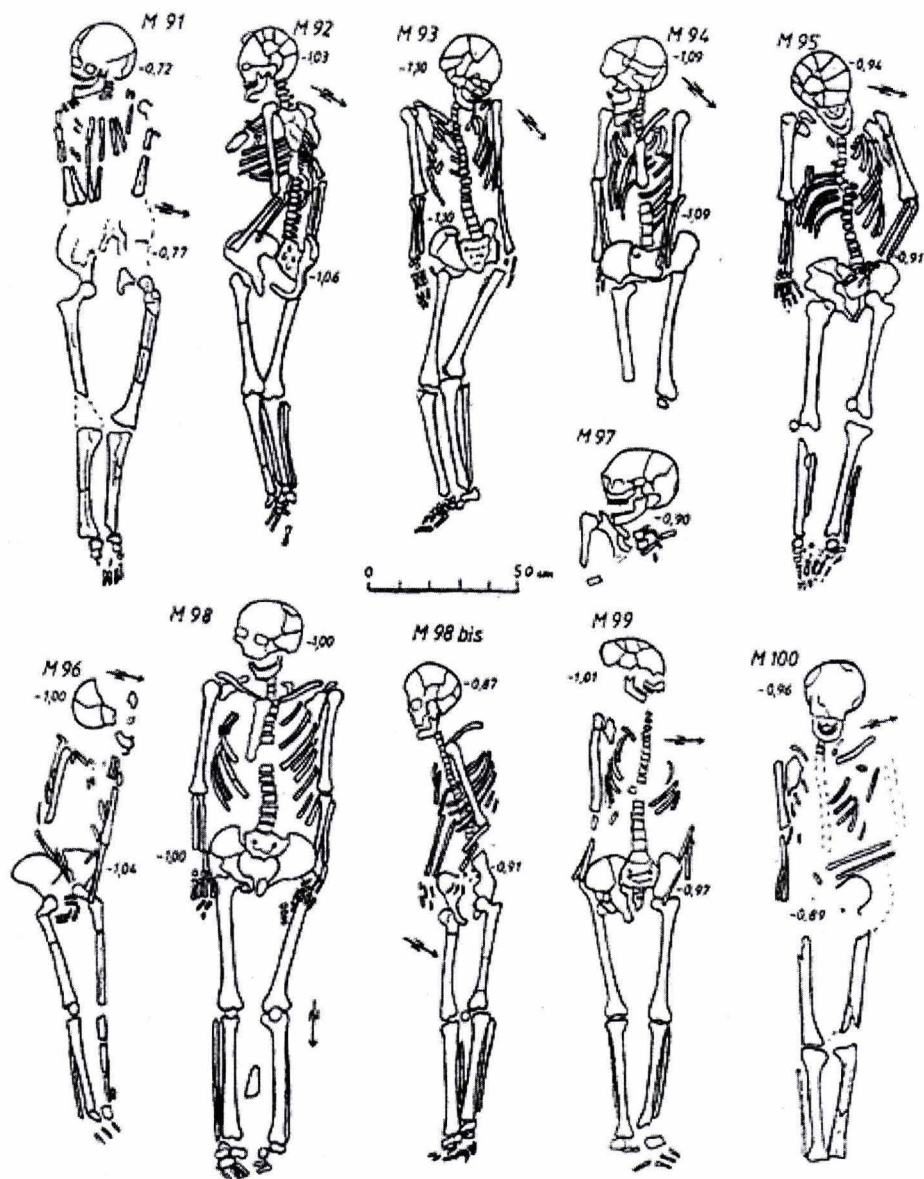


Fig. 2: Supine skeletons from Cernica, Romania (after Comşa, Cantacuzino 2001)

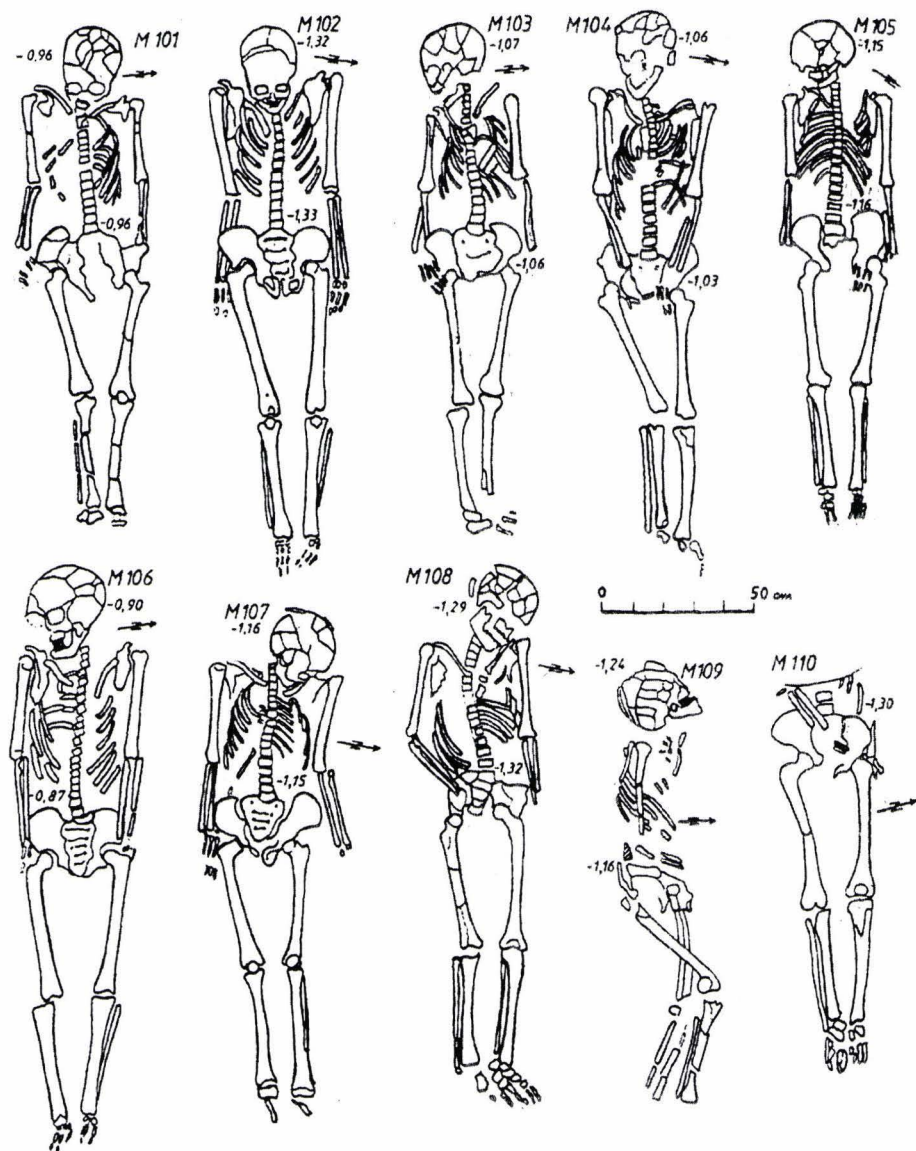


Fig. 3: Supine skeletons from Cernica, Romania (after Comşa, Cantacuzino 2001)

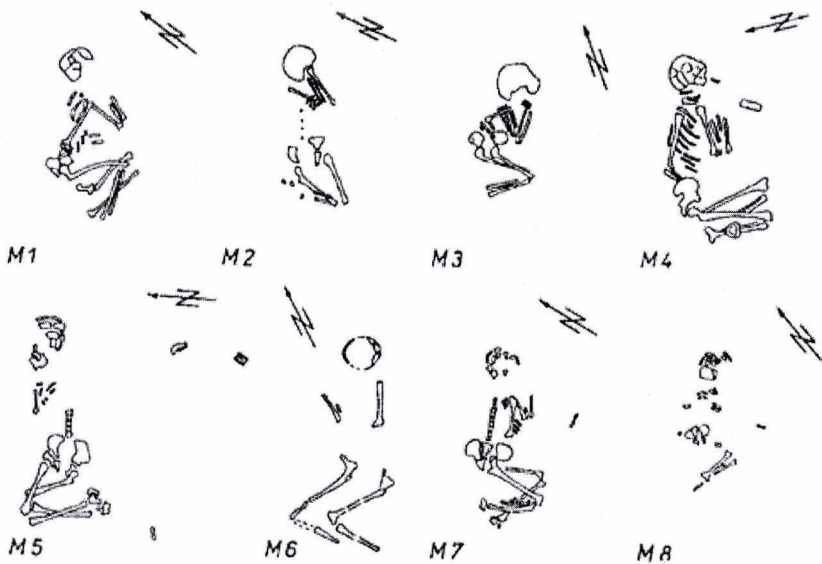


Fig. 4: Graves of the Boian Necropolis from Popești, Romania (after Șerbănescu 1995)

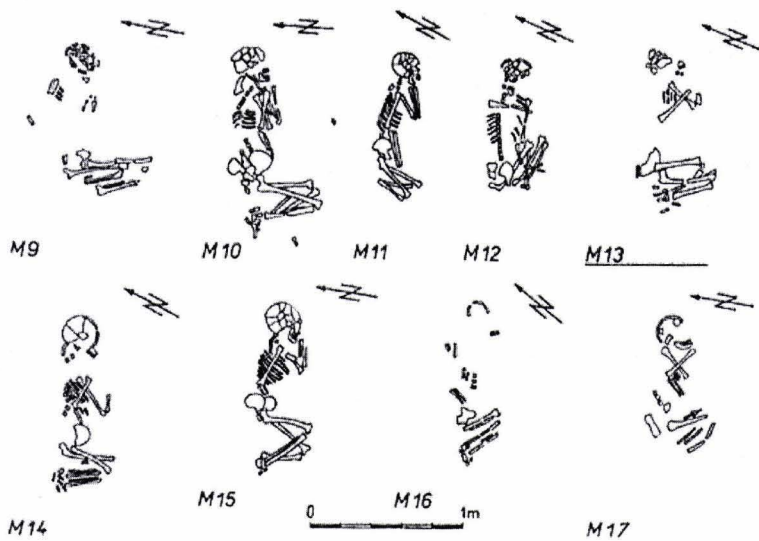


Fig. 5: Graves of the Boian Necropolis from Popești, Romania (after Șerbănescu 1995)

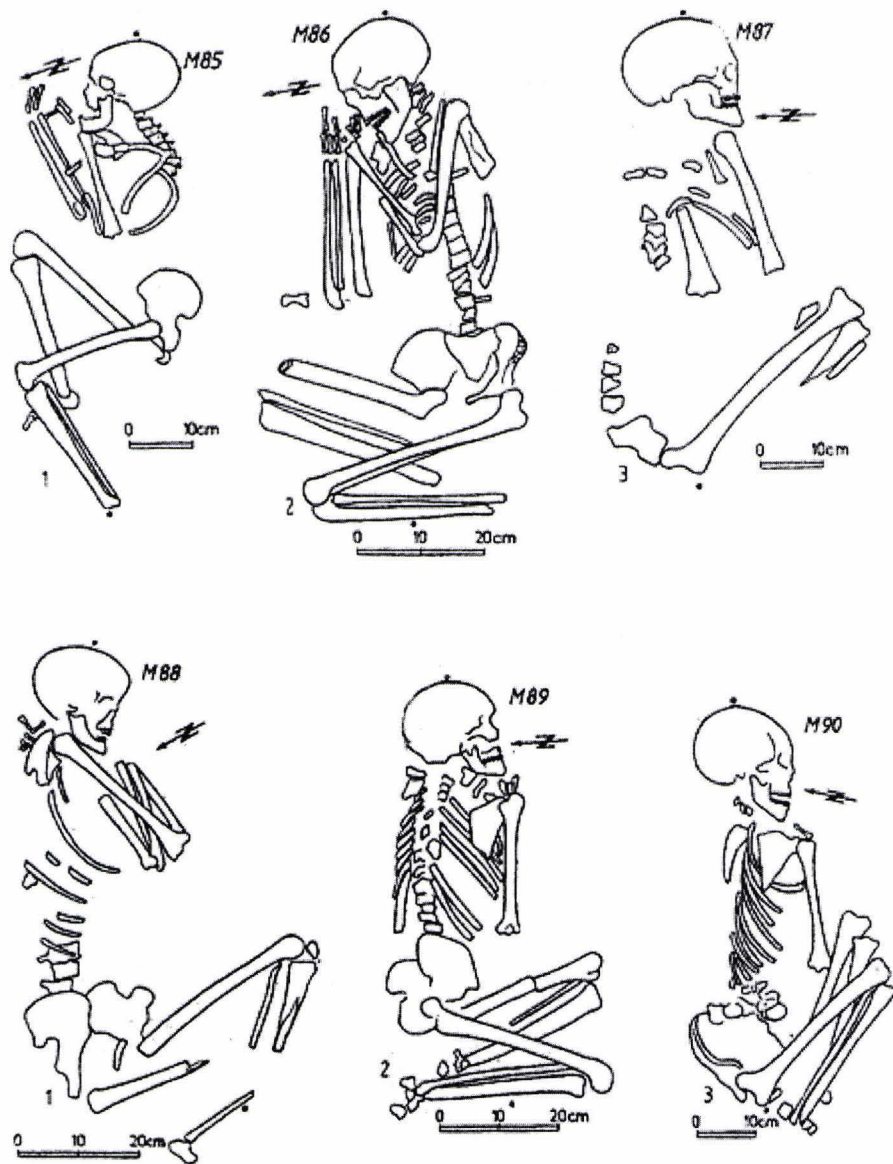


Fig. 6: Burials of the Vărăști Necropolis, Gumelnița Culture, Romania
(after Comșa E 1995a)

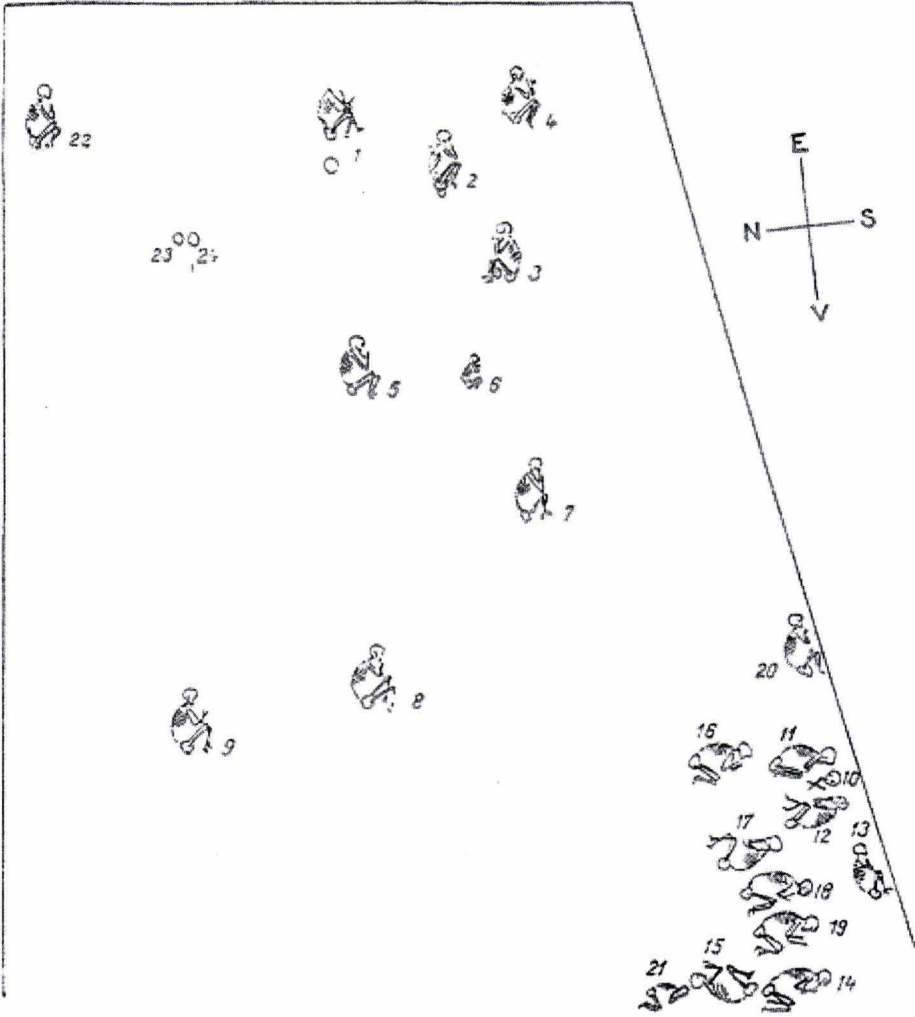


Fig. 7: The Necropolis from Kubrat, Bulgaria
(after Comşa 1960a)

EXCAVATIONS AT PEȘTERA UNGUREASCĂ (CAPRELOR)

(CHEILE TURZII, PETREȘTI DE JOS,
TRANSYLVANIA) 2003-2004:

A PRELIMINARY REPORT ON THE CHIPPED STONE ASSEMBLAGES FROM THE CHALCOLITHIC TOARTE PASTILATE (BODROGKERESZTÚR) LAYERS

Paolo Biagi, Barbara A. Voytek

Keywords: *Cheile Turzii, Chalcolithic, Carpathian obsidian, Volhynian flint, Traceology*

1. Preface

Cheile Turzii is located some 9 kilometres west of Turda, in the Petrești de Jos district in central Transylvania. It is a Natural Reserve in the limestone Trascăului Mountains formation, crossed by the Hășdatelor River, which flows in a northwest-southeast direction through a narrow gorge some 3 km long surrounded by peaks, which reach the maximum altitude of some 800 m (fig. 1 top). The gorge is very rich in caves (Barbulescu M., 1992), 42 of which have yielded traces of prehistoric or historic occupation. Of particular importance is *Peștera Ungurească* that opens at 46°33'49" N and 23°40'44" E on the right side of the gorge, at the foot of a steep cliff called *Peretele Vulturilor* (fig. 1 bottom), some 100 m above the course of the river. The cave, whose opening, about 19 m wide, faces north-north-east (fig. 1 bottom), is some 75 m long (Lazarovici Gh., et al., 1995, fig. 2).

The first excavations at the site were carried out by E. Orosz around the end of the XIX century. They were followed by those of N. Vlassa (1976) who opened a 4x6 m test-trench in the right side of the cave entrance, just below the vault, the edges of which were still visible in 2003. Further excavations were conducted by Gh. Lazarovici (Lazarovici Gh., et al., 1995).

These latter were resumed by one of the writers (P.B.) and Gh. Lazarovici of Reșița University in August 2003 and continued during the same month of 2004 (*Biagi P., Spataro M., 2004; Biagi P., 2005*).

The scope of the new excavations, funded by the Italian Ministry of Foreign Affairs (MAE) and the Prehistoric Society (London), was to redefine the stratigraphic sequence discovered by N. Vlassa, the preliminary results of which were published by *Gh. Lazarovici et al. (Lazarovici Gh., 1995)*. The Holocene sequence, some 1.50 m thick, is composed of ash and charcoal levels and sterile, sandy layers, from which several structures, among which are pits, hearths and an oval-shaped clay kiln, were brought to light (fig. 2). This sequence is of unique importance, because it is the only stratigraphy with traces of occupation, which cover a long time-span between the Middle Neolithic, Cheile Turzii-Lumea Nouă-Iclod (CCTLNI) (*Lazarovici Gh., 2000*) and the Bronze Age Coțofeni Cultures (*Roman P., 1976*). A layer, some 20 cm thick, which yielded almost exclusively micromammal remains and no material culture finds, was discovered below this sequence. The uppermost occupation is represented by pits and other structural remains from the Bronze Age Wietenberg Culture, through the classic Roman period up to the Hungarian migration (XI-XII century AD)

The 2003 and 2004 excavations covered a surface of some 5 sq. m. Given the absence of any water supply in the close proximity of the cave, all the excavated soil was transported manually down to the Hășdatelor River in plastic containers and water-sieved with a 1 mm grid. This procedure led to the (almost) complete recovery of the material culture, archaeozoological and archaeobotanical remains. Most of the excavation was carried out left of N. Vlassa's trench, where the stratigraphy shows a detailed sequence, some 1 m thick, attributed to the Chalcolithic Toarte Pastilate (Bodrogresztúr) aspect (*Maxim Z., 1999, 127*), beneath the Coțofeni occupation and above the Petrești one (fig. 3). The lowest "Early Toarte Pastilate" levels yielded one man-made structure delimited by an alignment of very small post-holes. Furthermore a clay kiln, rebuilt at least three times, was brought to light within the Middle Toarte Pastilate series (fig. 4). Excavated materials included an abundance of pottery sherds, stone tools, faunal and charred plant remains. Needless to say, the pottery was the most numerous artefact category.

Four radiocarbon dates were obtained from this latter part of the sequence from samples collected during the 2003 (GrN-29014) and 2004

seasons (GrN-29100, GrN-29101 and GrN-29102) (table 1 and fig. 5). Although it is difficult to understand why the radiocarbon results are stratigraphically upside-down, they show that this local aspect of the Transylvanian Chalcolithic flourished between the last three centuries of the fifth and the first two centuries of the fourth millennium Cal BP (at 2 sigmas). Of particular importance are dates GrN-29101, from charcoal, and GrN-29102, from a fragment of a *Bos primigenius* tibia, collected from the same level 2a3 in which the clay kiln was discovered. These dates are some 350 years younger than the most recent assay available for the Petrești Culture at least from the results obtained from Daia Româna, the only Transylvanian site so far radiocarbon-dated (Mantu M., 2000, 100).

Several gold beads, some 2 mm in diameter, and a few rectangular gold plaquettes were collected from this level. This should indicate that the kiln was most probably linked with the moulding of gold items as also shown by the preliminary results of the soil thin section analyses of a thick ash sample from the lower part of the 2b levels (G. Boschian, pers. comm. 2006).

Furthermore the accurate water-sieving of the Toarte Pastilate layer led to the recovery of other material culture and ornamental finds among which are one small copper perforator and two beads made from stone and shell as well as a great quantity of micromammal remains, including rodents, fish and bird bones, land snails, charred hazelnut shells and *Cornus mas* fruits, at least three species of *Triticum* caryopses and a great amount of charcoal fragments (R. Nisbet, pers. comm. 2006).

2. The chipped stone assemblage

The chipped stone assemblage is represented by obsidian, flint and radiolarite artefacts of exogenous provenance. The typological description of the implements (table 2) follows the list proposed by G. Laplace (Laplace G., 1964). Most of the artefacts (250) come from the Chalcolithic Toarte Pastilate levels, subdivided by G. Lazarovici into three main subsequent (development) periods (Early, Middle and Late: fig. 3). A few were collected from the levels above and below: 6 from the mixed Coțofeni/*Toarte Pastilate*, 20 from the Petrești Culture layers, and 5 are of uncertain provenance, most probably from the *Toarte Pastilate* levels. Altogether the assemblage consists of 281 artefacts (table 2).

2.1. The Toarte Pastilate assemblage

The Toarte Pastilate chipped stone assemblage is represented by 256 artefacts, among which are 12 implements (4.69%), 2 cores (0.78%), 71 unretouched artefacts (27.73%), 1 splintered piece (0.39%) and 170 shatters (66.40%) (table 2). Most of the artefacts are from obsidian (170: 66.40%) and Volhynian flint (66: 25.79%), while brown flint (9: 3.52%), grey radiolarite (6: 2.34%), grey flint (1: 0.39%) and Úrkút Transdanubian radiolarite (1: 0.39%) are much less represented. Furthermore 3 artefacts (1.17%) are "burnt". If we take into consideration the weight of the different raw materials employed for chipping artefacts, obsidian predominates (48 gr.: 45.28%) over Volhynian flint (30 gr.: 28.30%), Transdanubian radiolarite (16 gr.: 15.10%) and the other flint and radiolarite types (12 gr.: 11.32%) (fig. 6). This is mainly due to the occurrence of a great number of obsidian (and Volhynian flint) shatters.

Sixteen obsidian artefacts have been identified as from the Carpathian 1 source (Cejkov and/or Kašov in eastern Slovakia: *Williams O., Nandris J., 1977, fig. 2; Bigazzi G., et al., 1990, fig. 1*) by XRF at Toulouse (F) (fig. 7) and University of Calabria (I) laboratories.

2.1.1. Implements

The implements are represented by 2 End Scrapers (0.78% of the total assemblage), 4 Truncations (1.56%), 4 Trapezoidal Geometrics (1.56%) and 2 Retouched Blades (0.78%).

Both the End Scrapers are obtained from Volhynian flint. 1 is long (fig. 8, n. 1) on a blade and 1 short on a flake (fig. 8, n. 2). The front of the first was used for scraping wood and its left side for cutting wood, while the front of the second for scraping hard.

The Truncations are obtained from obsidian microbladelets: 1 proximal specimen is slightly oblique, with an abrupt, direct retouch (fig. 9, n. 4) and 1 is distal (fig. 9, n. 5).

The Trapezes are all from obsidian bladelets. 3 are of isosceles type with two oblique, slightly concave truncations (fig. 9, nn. 6-8) and 1 rectangular, with one of the two truncations which is convex, obtained with a bifacial retouch (fig. 8, n. 5). The right side of this latter tool was used for cutting medium hard material.

The Retouched Bladelets are represented by two fragments with simple, marginal unilateral retouch of obsidian and Volhynian flint respectively.

2.1.2. Cores

Only one prismatic specimen from grey radiolarite with microflakelet detachments and a Core trimming flakelet with microbladelet detachments of Carpathian 1 obsidian (fig. 9, n. 2). Another prismatic core with microbladelet detachments is of "uncertain" provenance (fig. 9, n. 1).

2.1.3. Unretouched artefacts

Apart from the above-mentioned tools, 1 unretouched Volhynian flint blade (fig. 8, n. 4) and 1 Carpathian 1 obsidian bladelet (fig. 8, n. 3) show traces of cutting soft and cutting medium respectively.

2.1.4. Splintered Pieces

Only one specimen of Volhynian flint with hard hammering detachments on both surfaces at the proximal end (fig. 9, n. 14).

2.1.5. Shatters

Are very numerous (170): 122 from obsidian, 38 from Volhynian flint and 10 from other flint, mainly of brown colour, 3 of which are burnt. Their presence indicates without any doubt that the implements were manufactured and subsequently retouched at the entrance (inside?) the cave.

2.2. The Petrești Culture assemblage

Given the small surface excavated during the 2003-2004 seasons, it is represented by only 20 artefacts from layer 3. Amongst these are 2 implements, 2 unretouched pieces and 14 shatters. The commonest raw material employed for chipping tools is Carpathian 1 obsidian (10 pieces), followed by Volhynian flint (7 pieces) and flint from other sources (3 pieces).

The implements are 1 short End Scraper of Volhynian flint with converging sides and a lateral complementary retouch, whose front shows traces of scraping hard, and both sides cutting hard (fig. 8, n. 7) and 1 isosceles Trapeze with slightly convex, direct truncations, on a bladelet of Carpathian 1 obsidian (fig. 9, n. 9).

2.3. Other tools

Apart from the above-mentioned pieces, the assemblage includes 5 specimens of "uncertain" provenance that are listed at the end of table 2.

Among these are 1 obsidian, prismatic bladelet core (fig. 9, n. 1), 1 proximal fragment of a hafted blade with cut hard traces (fig. 8, n. 6) and 1 probable proximal straight borer on a thick flakelet (fig. 9, n. 3).

3. Discussion

According to the results obtained from the analysis of the chipped stone artefacts and other evidences, the activities practised at the cave during the Toarte Pastilate period were many and varied. There is a strong evidence for stone tool manufacturing, including cores and shatter.

The obsidian had been carried to the cave in nodules that were reduced to cores and subsequently chipped into tools as the high number of shatters indicates. All the raw materials employed for the manufacture of the stone tools come from a great distance. No local resources have been used although there are such sources in Transylvania (*Comşa E.*, 1976, 244; *Luca S.A. et al.*, 2004, 66). As mentioned above, the obsidian is always of Carpathian 1 type (Cejkov and/or Kašov in eastern Slovakia), a source of very transparent and sometimes variegated material located some 300 kms north-north-west of the cave. This type of obsidian is well known for its long-distance distribution (*Williams Thorpe O. et al.*, 1984, fig. 9) that reached Western Macedonia during the Late Neolithic period (*Kilikoglou V. et al.*, 1996, 347). Extensive research on obsidian has shown that no sources are found in Romania (*Nandris J.*, 1975) despite previous claims of the existence of such sources in the country (*Biró K.*, 2006, 271; *Kasztovszki Z., Biró K.*, 2006, 303).

The Volhynian flint comes from north-west Ukraine, some 400 kms north-east of the site (*Zaliznyak L.*, 2005, fig. 6), while the Úrkút Transdanubian radiolarite is from the Bakoni Mountains near Veszprem in

Hungary, some 500 km to the west of the Cheile Turzii (Biró K., Dobosi V., 1991, 53). The chipped stone artefacts from *Peștera Ungurească* mirror findings elsewhere. They demonstrate long-distance procurement networks from western Hungary, the western Carpathians and north-western Ukraine towards central Transylvania at least from the late fifth millennium Cal BC (Constantinescu B. et al., 2002, 377).

The kiln that was uncovered is evidence for the smelting of gold in the cave, as are the gold beads and plaquettes that were found through water sieving. Smelting native gold would have required temperatures of at least 1063°. This procedure would involve a great quantity of wood as fuel and consequent residuals in the form of charcoals and thick ash levels (R. Nisbet, pers. comm. 2006). Evidence for such an early activity is poorly documented and so far unknown in the region from any cave settings.

Concerning the chipped stone tools, the presence of trapezes is notable in that such pieces are considered to be common for the Early Neolithic sites, although in Romania they are known also from later Neolithic cultural aspects (Păunescu A., 1970; Comșa E., 1971). A comparison of the implements does indicate that early (isosceles) types, such as those associated with the Criș, as well as the Starčevo (Karmanski S., 2005, plate CLXXVIII) and Körös Cultures (Starnini E., 1993, 81), are different in form from those from *Peștera Ungurească*, where they most probably made their first appearance during the Petrești period and continued to be in use throughout the entire *Toarte Pastilate* occupation. Interestingly, the only trapeze that showed microwear traces from use had not functioned as an armature, but rather as part of a cutting tool (fig. 8, n. 5).

Of particular interest is also the occurrence of obsidian Truncations on a microbladelet (fig. 9, n. 5) and a microflakelet (fig. 9, n. 6), which do not find parallels from any other Chalcolithic site in Transylvania.

The microwear analysis shows that a variety of tasks were carried out at the cave, suggesting that it had been occupied for a rather long time as also indicated by the radiocarbon results (table 1). Such an occupation would involve also the smelting activities mentioned above which were conducted during a specific period of the *Toarte Pastilate* occupation of the site. The typological study demonstrates that the most common lithic implement was the End Scraper, a tool that dominated Neolithic Balkan sites at least from the Vinča Culture onwards (Radovanović I. et al., 1984), although different varieties of this tool are quite common throughout the whole period comprised

between the Early Neolithic and the beginning of the Chalcolithic in Romania (Comşa E., 1971). Broadly speaking the End Scraper is a type that is also common for the Petreşti Culture in general (Paul I., 1992, 38) although no specimens with convergent sides, such as that of fig. 8, n. 7, have ever been found so far from any of the sites of this culture.

The faunal remains indicate that different environments were exploited for the meat diet of the inhabitants of the cave during the Chalcolithic period, who practised both hunting and the rearing of large game supplemented by fishing, fowling and the collection of freshwater turtles. This evidence in the consequence of the complex geography of the area in which the cave opens, that is represented by a variety of environmental and microclimatic zones among which are middle-altitude karstic pastures that open just above steep, somewhat forested cliffs of the gorge crossed by a narrow stream, and the terraces formed by the Ariesul River. The occurrence of large-sized fish vertebrae suggests that they had been acquired, most likely, from fishing in this later water course that flows some 2.5 km east of the cave of which the Hăşdatelor is an affluent that joins the Mureş River some 30 km to the east-south-east as the crow flies.

Charred remains are also plentiful. As mentioned above, the analyses so far indicate the presence of *Cornus mas* (fruits), hazelnut shells as well as different varieties of domesticated wheat, suggesting that both the seasonal gathering of plant foods and agriculture integrated the diet of those living in the cave.

4. Conclusion

The excavations at Peştera Ungurească have helped shed light on a unique archaeological area, the Cheile Turzii gorge, that has so far received little detailed attention although it has been known for many years. The activities that had taken place at the cave during the Chalcolithic were many and varied. They attest, along with the radiocarbon dates, a fairly long occupation. Of especial interest is the kiln that had been used to smelt gold, resulting also in some finds of gold beads and plaquettes.

The analysis of the chipped stone assemblage from the *Toarte Pastilate* levels excavated in 2003 and 2004 has shown that the cave was part of a complex network system for the procurement of the raw materials for the manufacture of obsidian, flint and radiolarite tools that covered a radius of

some 500 km. It demonstrates that during this period raw materials with excellent technological qualities were required by the local inhabitants for their daily necessities, a phenomenon already known from other neighbouring areas already during the Neolithic (*Kaczanowska M., Kozłowski J., K., 1994*).

Furthermore the identification of the provenance of the obsidian artefacts has shown that they were traded exclusively from the sources of Cejkov and or Kašov in the Tokaj Mountains of eastern Slovakia. This variety of obsidian is characterised by lumps of transparent, sometimes almost colourless or striped material, which were collected from the surface or excavated from the loess sediments of the availability area. The presence of a great quantity of shatters, typical residuals of the local manufacture of the retouched instruments, which were collected thanks to the small grid water-sieving of the excavated sediments, indicates that the production of the chipped stone implements took place within the excavated area, even at the entrance of the cave. These activities had so far never been recorded from any other Chalcolithic site of Carpathian Transylvania. They show that an accurate sieving is absolutely necessary for the collection of material culture and archaeozoological remains in order to favour the achievement of a reasonable understanding of the activities practised within a complex archaeological site whose geographical location is unique.

Given the inaccuracy of the studies so far conducted in the *Cheile Turzii* gorge and its surroundings, it is at present impossible to ascertain whether the cave was part of a system which included open-air large settlements and sites with other (more specific?) characteristics and their eventual complementary role within the regional settlement pattern. Nevertheless it is important to point out that the cave was repeatedly settled during several periods of the Holocene, from the middle Atlantic onwards. This indicates the importance played by a cave site of fairly uneasy access even during such periods and the complexity of the Chalcolithic settlement system in the environmentally variegated territory surrounding Petrești de Jos.

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Table 1: Peștera Ungurească: radiocarbon and calibrated dates at 1 and 2 sigmas from the Toarte Pastilate levels

Signature	Material	Lab. Number	Date BP	Date BC (1 sigma)	Date BC (2 sigmas)	Layer
CT2	Charcoal	GrN-29100	5100+/-40	3950-3820 (68.2%)	3980-3790 (95.4%)	2B
CT4	<i>Bos primigenius</i> tibia	GrN-29102	5120+/-40	3970-3820 (68.2%)	4010-3800 (95.4%)	2A3
CT3	Charcoal	GrN-29101	5260+/-40	4190-4010 (68.2%)	4230-3980 (95.4%)	2A3
CT1	<i>Fraxinus</i> , <i>Quercus</i> , <i>Pomoideae</i>	GrN-29014	5350+/-40	4260-4080 (68.2%)	4320-4050 (95.4%)	2A

Table 2: Peștera Ungurească: typological description according to Laplace, G., (1964) and other characteristics of the chipped stone implements from the 2003-2004 excavations. The dimensions are indicated as follows: eee = hypermicroflakelets, ee = microflakelets, e = flakelets, E = flakes, lll = hypermicrobladelets, ll = microbladelets, l = bladelets, L = blades. eee and lll <1.25 cm, ee and ll between 1.25 and 2.50 cm, e and l between 2.50 and 5.00 cm, E and L between 5.00 and 10.00 cm

PESTERA UNGUREASCA							
Level/ Square	Raw material	Typology	Dimensions (mm)	State	Analytical method- analysis n.	Wear Traces	Figure
Toarte Pastilate							
1.1/E1	Volhynian flint	L1 [Smd sen]	(16)x13x3	mesial fragment			
1.1/E1	obsidian	shatter					
1.1/E1	brown flint	shatter					
1.1/E1	dark brown flint	shatter					
1.1/F6	Carpathian 1 obsidian	Gm6 [Apd+Apd]	23x13x2	complete	XRF-ctpu14		9, n. 7
1.1/F6	Carpathian 1 obsidian	fl	(34)x14x5	distal fragment	XRF-ctpu7	cut medium	8, n. 3
1.2/E6	obsidian	T2 dist [Apd]	10x10x2	complete			9, n. 5
1.2/E6	Volhynian flint	fl	(18)x10x2	proximal fragment			
1.2/E6	Volhynian flint	fl	(15)x11x3	distal fragment			
1.2/E6	obsidian	fl	(15)x5x1	proximal fragment			
1.2/E6	obsidian	fl	(7)x14x2	mesial fragment			
1.2/E6	Volhynian flint	fl	(9)x8x1	mesial fragment, corticated			
1.2/E6	obsidian	shatter					
1.2/E6	obsidian	shatter					
1.2/F5	Volhynian flint	G1	(27)x17x6	distal fragment		cut wood - scrape wood	8, n. 1
1.2/F5	grey radiolarite	prismatic microflakelet core	15x23x16	complete			
1.2/F5	Carpathian 1 obsidian	core trimming flakelet	11x21x7	complete	XRF-CT11		9, n. 2
1.2/F5	brown flint	eee	10x8x2	complete			
1.2/F5	obsidian	shatter					
1.2/F5	obsidian	shatter					
1.2/F5	brown flint	shatter					
1.2/F5	light grey radiolarite	shatter					
1.2/F6	obsidian	fl	(8)x7x1	mesial fragment			
1.2/F6	Carpathian 1 obsidian	ee	27x15x7	complete, corticated	XRF-CT8		
1.2/F6	obsidian	ee	14x11x5	complete			
1.2/F6	Carpathian 1 obsidian	e	28x30x6	complete, corticated	XRF-CT9		
1.2/F6	obsidian	shatter					

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Level/ Square	Raw material	Typology	Dimensions (mm)	State	Analytical method- analysis n.	Wear Traces	Figure
1.2/F6	obsidian	shatter					
1.2/F6	obsidian	shatter					
1.2/F6	obsidian	shatter					
1.2/F6	obsidian	shatter					
1.2/F6	obsidian	shatter					
1.2/F6	obsidian	shatter					
1.2/F6	obsidian	shatter					
1.2/F6	obsidian	shatter					
1.2/F6	obsidian	shatter					
1.2/F6	obsidian	shatter					
1.2/F6	obsidian	shatter					
1.2/F6	obsidian	shatter					
1.2/F6	obsidian	shatter					
1.2/F6	obsidian	shatter					
1.2/F6	obsidian	shatter					
1.2/F6	brown flint	shatter					
1.2/F6	brown flint	shatter					
1.2/F6	brown flint	shatter					
1a2/F5	obsidian	fl	13x6x2	complete			
1a2/F5	obsidian	fl	8x10x1	mesial fragment			
1a2/F5	obsidian	ee	16x12x2	complete, corticated			
1a2/F5	Carpathian 1 obsidian	fee	(10)x12x1	proximal fragment	XRF-CT5		
1a2/F5	Volhynian flint	eee	9x12x2	complete			
1a2/F5	Volhynian flint	eee	9x8x2	complete			
1a2/F5	obsidian	shatter					
1a2/F5	obsidian	shatter					
1a2/F5	obsidian	shatter					
1a2/F5	obsidian	shatter					
1a2/F5	obsidian	shatter					
1a2/F5	obsidian	shatter					
1a2/F5	obsidian	shatter					
1a2/F5	obsidian	shatter					
1a2/F5	obsidian	shatter					
1a2/F5	obsidian	shatter					
1a2/F5	obsidian	shatter					
1a2/F5	Volhynian flint	shatter					
1a2/F5	Volhynian flint	shatter					
1a2/F6	obsidian	L1 [Smd sen dist]	(9)x6x1	distal fragment			
1a2/F6	Volhynian flint	fl	(18)x12x2	proximal fragment, corticated			
1a2/F6	Volhynian flint	fl	(8)x7x2	mesial fragment			
1a2/F6	Carpathian 1 obsidian	fl	(12)x10x2	mesial fragment	XRF-CT10		
1a2/F6	Volhynian flint	ee	17x18x2	complete			
1a2/F6	obsidian	ee	14x8x3	complete, corticated			
1a2/F6	obsidian	ee	23x15x4	complete			
1a2/F6	Carpathian 1 obsidian	fee	(13)x(13)x3	proximal fragment	XRF-CT12		
1a2/F6	obsidian	fee	(10)x11x3	proximal fragment			
1a2/F6	obsidian	fee	(11)x11x3	distal fragment			
1a2/F6	Volhynian flint	fee	10x7x2	proximal fragment			
1a2/F6	Volhynian flint	fee	(10)x8x1	distal fragment			
1a2/F6	obsidian	eee	7x7x4	complete			
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					

Level/ Square	Raw material	Typology	Dimensions (mm)	State	Analytical method- analysis n.	Wear Traces	Figure
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	obsidian	shatter					
1a2/F6	Volhynian flint	shatter					
1a2/F6	Volhynian flint	shatter					
1a2/F6	Volhynian flint	shatter					
1a2/F6	Volhynian flint	shatter					
1a2/F6	Volhynian flint	shatter					
1a2/F6	Volhynian flint	shatter					
1a2/F6	Volhynian flint	shatter					
1a2/F6	Volhynian flint	shatter					
1a2/F6	Volhynian flint	shatter					
1a2/F6	brown flint	shatter					
1a2/F6	brown flint	shatter					
1b2/F5	grey radiolarite	fl	(30)x16x4	mesial fragment			
1b2/F5	Carpathian 1 obsidian	fil	(20)x7x2	proximal fragment	XRF-CT6		9, n. 10
1b2/F5	grey radiolarite	ee	13x19x5	complete			
1b2/F5	Carpathian 1 obsidian	fee	(13)x12x3	mesial fragment, corticated	XRF-CT7		
1b2/F5	obsidian	shatter					
1b2/F5	obsidian	shatter					
1b2/F5	obsidian	shatter					
1b2/F5	obsidian	shatter					
1b2/F5	obsidian	shatter					
1b2/F5	obsidian	shatter					
1b2/F5	obsidian	shatter					
1b2/F5	obsidian	shatter					
1b2/F5	obsidian	shatter					
1b2/F5	obsidian	shatter					
1b2/F5	obsidian	shatter					
1b2/F5	obsidian	shatter					
1b2/F5	obsidian	shatter					
1b2/F5	burnt flint	shatter					
1b2/F5	Volhynian flint	shatter					

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Level/ Square	Raw material	Typology	Dimensions (mm)	State	Analytical method- analysis n.	Wear Traces	Figure
1b2/F6	Volhynian flint	fl	(42)x19x6	mesial fragment, corticated		cut soft	8, n. 4
1b2/F6	Transdanubian radiolarite- Urkut Eplény type	e	35x30x15	complete, corticated			
2a/E6	Volhynian flint	ll	16x5x2	complete			
2a/E6	Carpathian 1 obsidian	feee	(9)x19x2	mesial fragment, corticated	XRF-ctpu2		
2a/E6	obsidian	shatter					
2a/E6	obsidian	shatter					
2a/E6	obsidian	shatter					
2a/E6	obsidian	shatter					
2a/E6	obsidian	shatter					
2a/E6	obsidian	shatter					
2a/E6	obsidian	shatter					
2a/E6	obsidian	shatter					
2a/E6	Volhynian flint	shatter					
2a/E6	Volhynian flint	shatter					
2a/E6	Volhynian flint	shatter					
2a/E6	Volhynian flint	shatter					
2a/F6	grey radiolarite	l	35x9x4	complete			9, n. 12
2a/F6	Carpathian 1 obsidian	e	32x36x8	complete, corticated	XRF-ctpu9		
2a/F6	obsidian	shatter					
2a/F6	obsidian	shatter					
2a/F6	obsidian	shatter					
2a/F6	Volhynian flint	shatter					
2a/F6	Volhynian flint	shatter					
2a1/F6	obsidian	fl	(10)x9x3	proximal fragment			
2a1/F6	Carpathian 1 obsidian	e	21x24x8	complete, corticated	XRF-ctpu13		
2a1/F6	Carpathian 1 obsidian	fe	(24)x17x4	proximal fragment	XRF-ctpu4		
2a1/F6	obsidian	shatter					
2a1/F6	obsidian	shatter					
2a2/F5	grey flint	fl	8x7x2	mesial fragment			
2a2/F5	obsidian	fee	(12)x14x3	proximal fragment			
2a2/F5	Volhynian flint	fee	(12)x18x3	mesial fragment, corticated			
2a2/F5	obsidian	shatter					
2a2/F5	obsidian	shatter					
2a2/F5	obsidian	shatter					
2a2/F5	Volhynian flint	shatter					
2a2/F5	Volhynian flint	shatter					
2a3/F6	obsidian	T3 [Apd prox]	(10)x9x2	proximal fragment			9, n. 4
2a3/F6	Carpathian 1 obsidian	e	24x30x7	complete, corticated	XRF-ctpu10		
2a3/F6	Carpathian 1 obsidian	fe	(26)x26x6	proximal fragment, corticated	XRF-ctpu11		
2a3/F6	obsidian	ee	13x13x5	complete			
2a3/F6	obsidian	shatter					
2a3/F6	obsidian	shatter					
2a3/F6	obsidian	shatter					
2a3/F6	obsidian	shatter					
2a3/F6	Volhynian flint	shatter					
2b/E6	Carpathian 1 obsidian	Gm6 [Apd+Apd]	20x10x2	complete	XRF-CT1		9, n. 6
2b/E6	obsidian	fl	(10)x7x2	distal fragment			
2b/E6	Volhynian flint	ee	16x13x3	complete, corticated			
2b/E6	obsidian	eee	10x8x4	complete			

PESTERA UNGUREASCA

Level/ Square	Raw material	Typology	Dimensions (mm)	State	Analytical method- analysis n.	Wear Traces	Figure
2b/E6	obsidian	shatter					
2b/E6	Volhynian flint	shatter					
2b/F5	obsidian	shatter					
2b/F6	Volhynian flint	ee	14x27x4	complete			
2b/F6	Volhynian flint	fee	(12)x13x2	mesial fragment			
2b/F6	Volhynian flint	eee	11x9x1	complete			
2b/F6	obsidian	shatter					
2b/F6	obsidian	shatter					
2b/F6	obsidian	shatter					
2b/F6	obsidian	shatter					
2b1/E6	Volhynian flint	eee	9x10x2	complete			
2b1/E6	obsidian	shatter					
2b1/E6	obsidian	shatter					
2b1/E6	obsidian	shatter					
2b1/E6	Volhynian flint	shatter					
2b1/E6	Volhynian flint	shatter					
2b1/F5- F6	Carpathian 1 obsidian	Gm6 [Apd+Apd]	15x12x4	complete	XRF-ctpu8		9, n. 8
2b1/F6	Volhynian flint	T3 [Apd dist]	(10)x8x2	distal fragment			
2b1/F6	obsidian	fee	(8)x8x2	distal fragment			
2b1/F6	obsidian	fee	(6)x8x2	proximal fragment			
2b1/F6	obsidian	fee	(12)x13x4	mesial fragment			
2b1/F6	Volhynian flint	fee	(10)x24x3	proximal fragment			
2b1/F6	light grey radiolarite	fee	(7)x11x1	mesial fragment			
2b1/F6	obsidian	eee	10x10x5	complete			
2b1/F6	obsidian	shatter					
2b1/F6	obsidian	shatter					
2b1/F6	obsidian	shatter					
2b1/F6	Volhynian flint	shatter					
2b1/F6	Volhynian flint	shatter					
2b1/F6	burnt flint	shatter					
2b2/F5	obsidian	fee	(10)x14x2	mesial fragment			
2b2/F5	Carpathian 1 obsidian	fee	(9)x17x2	mesial fragment	XRF-CT3		
2b2/F5	Volhynian/Prut flint	shatter					
2b2/F6	Volhynian flint	G3 dist	36x31x9	complete		scrape hard	8, n. 2
2b2/F6	obsidian	fl	(12)x7x2	proximal fragment			
2b2/F6	Volhynian flint	fl	(15)x10x3	mesial fragment			
2b2/F6	Volhynian flint	fl	(13)x6x2	proximal fragment			
2b2/F6	obsidian	eee	7x8x1	complete			
2b2/F6	Volhynian flint	eee	9x10x1	complete, corticated			
2b2/F6	Volhynian flint	feee	(7)x6x1	proximal fragment			
2b2/F6	obsidian	shatter					
2b2/F6	Volhynian flint	shatter					
2b2/F6	Volhynian flint	shatter					
2b4/F6	obsidian	T3 [Apd dist]	11x11x3	complete			9, n. 5
2b4/F6	obsidian	Gm7 [Apd+Apb conv]	15x15x2	complete		cut medium	8, n. 5
2b4/E6	Volhynian flint	E1 splintered piece	(33)x19x7	proximal fragment			9, n. 14
2b4/F6	Volhynian flint	lil	11x4x1	complete			
2b4/F6	Volhynian flint	feee	(7)x8x2	proximal fragment			
2b4/F6	obsidian	shatter					
2b4/F6	obsidian	shatter					
2b4/F6	Volhynian flint	shatter					
2b4/F6	Volhynian flint	shatter					
2b4/F6	Volhynian flint	shatter					
2b4/F6	Volhynian flint	shatter					
2b4/F6	Volhynian flint	shatter					
2b4/F6	burnt flint	shatter					

PESTERA UNGUREASCA

Level/ Square	Raw material	Typology	Dimensions (mm)	State	Analytical method- analysis n.	Wear Traces	Figure
Petresti Culture							
3a/E6	obsidian	shatter					
3a/E6	Volhynian flint	shatter					
3a1/E6	Volhynian flint	fl	(51)x40x14	proximal fragment			9, n. 13
3a1/E6	light grey radiolarite	fl	8x10x2	complete			
3a1/E6	obsidian	shatter					
3a1/E6	obsidian	shatter					
3a1/E6	Volhynian flint	shatter					
3a1/E6	Volhynian flint	shatter					
3a1/E6	Volhynian flint	shatter					
3a1/E6	light grey radiolarite	shatter					
3a2/E6	Volhynian flint	G4/5mm bil	44x42x12	complete		cut hard - scrape hard - cut hard	8, n. 7
3a2/E6	Carpathian 1 obsidian	fl	(31)x10x3	mesial fragment	XRF-ctpu5		9, n. 11
3a2/E6	Carpathian 1 obsidian	fl	13x9x3	mesial fragment	XRF-CT13		
3a2/E6	obsidian	shatter					
3a2/E6	obsidian	shatter					
3a2/E6	Volhynian flint	shatter					
3b2/F6	obsidian	shatter					
3b2/F6	obsidian	shatter					
3b2/F6	dark reddish brown flint	shatter					
3c/E6	Carpathian 1 obsidian	Gm6 [Apd+Apd]	17x12x2	complete	XRF-ctpu6		9, n. 9
Uncertain							
PitA -70 cm/F6	Carpathian 1 obsidian	Bc2 [Apbf sen]	(18)x9x6	distal fragment	XRF-ctpu3b		9, n. 3
PitA -70 cm/F6	Carpathian 1 obsidian	fl	(12)x9x3	distal fragment, corticated	XRF-ctpu3a		
60- 70cm/F6	Volhynian flint	L2 [Spa]=gloss sen	(29)x15x5	proximal fragment		cut hard - haft?	8, n. 6
130cm/E6	Carpathian 1 obsidian	fl	(18)x12x4	distal fragment, corticated	XRF-ctpu1		
surface	Carpathian 1 obsidian	prismatic microbladelet core	23x18x16	complete, corticated	XRF-CT2		9, n. 1



Fig. 1: The entrance of the gorge of Cheile Turzii from the south-east (top) and the opening of Peștera Ungurească at the base of the cliff called Preteler Vulturior (arrow: bottom)
(photographs by P. Biagi)

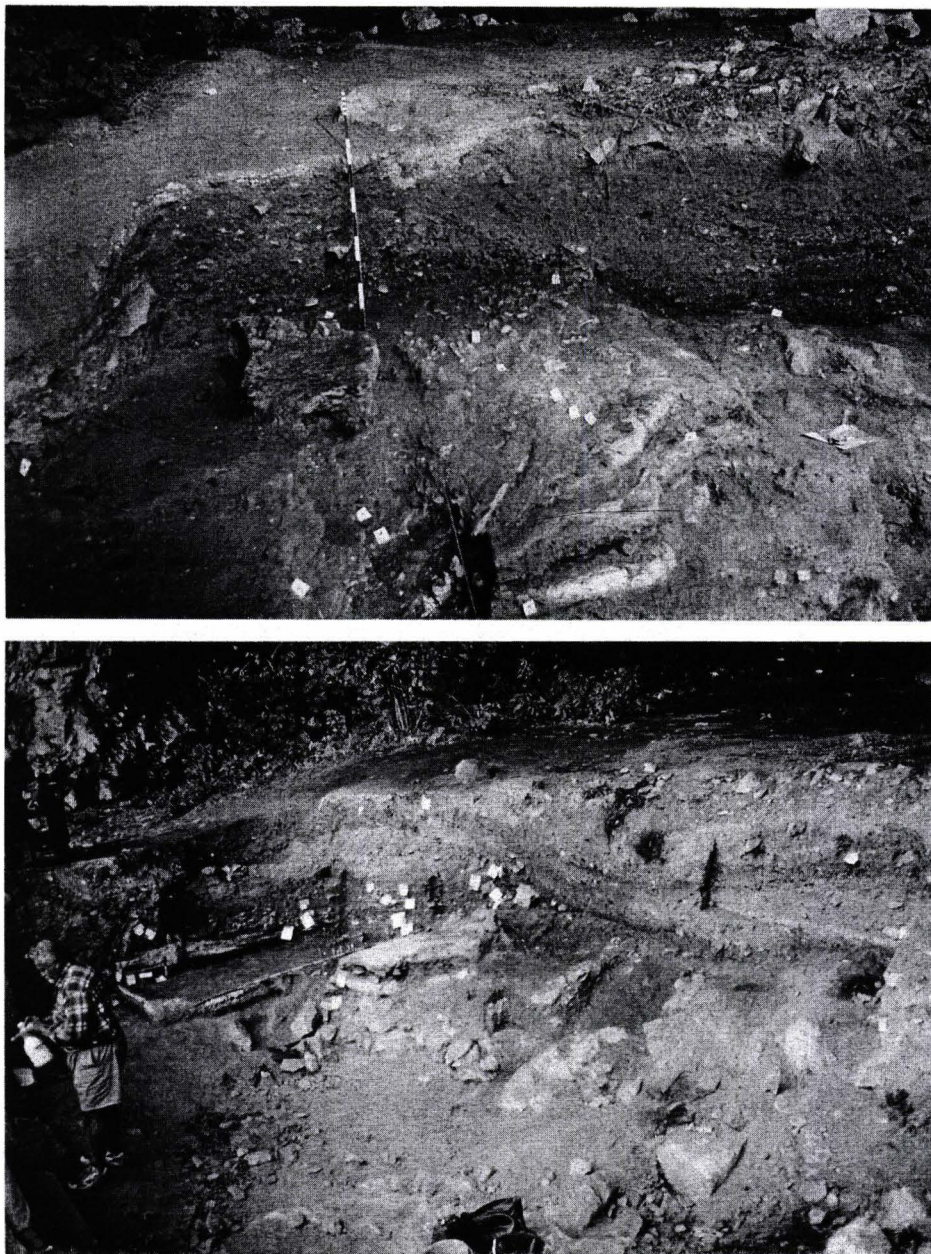


Fig. 2: Peștera Ungurească: views of the 2004 excavation after removing the uppermost levels (top) and after the excavation of the Toarte Pastilate levels (bottom)
(photographs by P. Biagi)

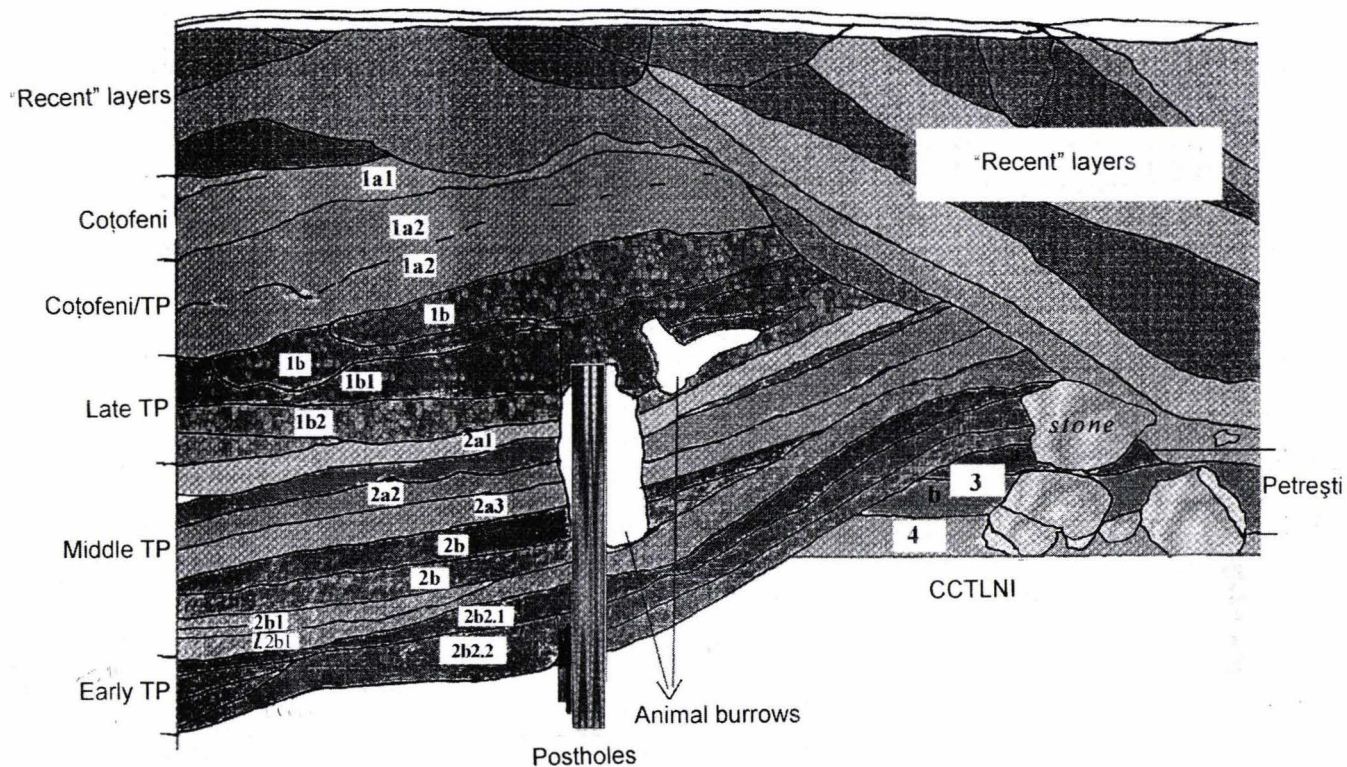


Fig. 3: Peștera Ungurească: schematic representation of the sequence excavated in 2003-2004 (drawing by G. Lazarovici with variations)

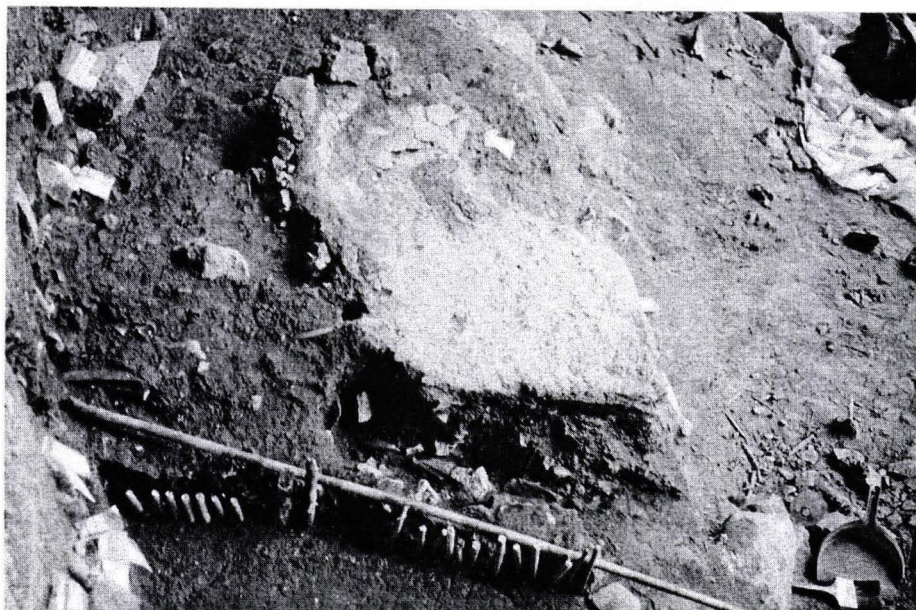


Fig. 4: Peștera Ungurească: view of the Toarte Pastilata sequence excavated in 2004 with the clay kiln – right – and the ash and charcoal lower levels delimited by small „postholes” (top) and the clay kiln (bottom) (photographs by P. Biagi)

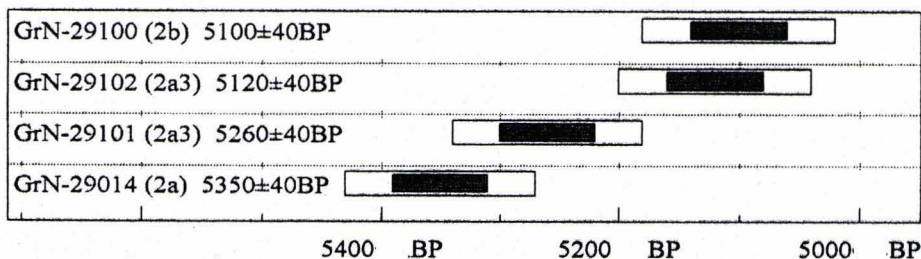
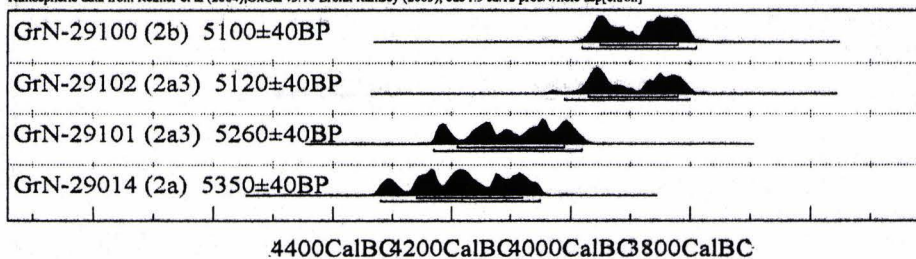


Fig. 5: Peștera Ungurească: radiocarbon dates obtained from the Toarte Pastilate levels (bottom) calibrated according OxCal 3.10 (top)

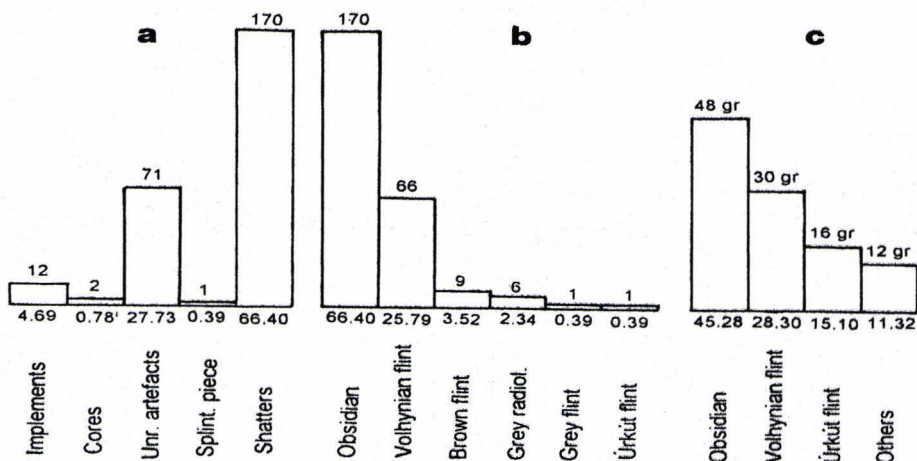


Fig. 6: Peștera Ungurească: block indexes of the Toarte Pastilate chipped stone assemblage: number and percentages of the differnt artefacts (a) and materials employed (b); weight and percentage of the materials employed (c) (drawing by P. Biagi)

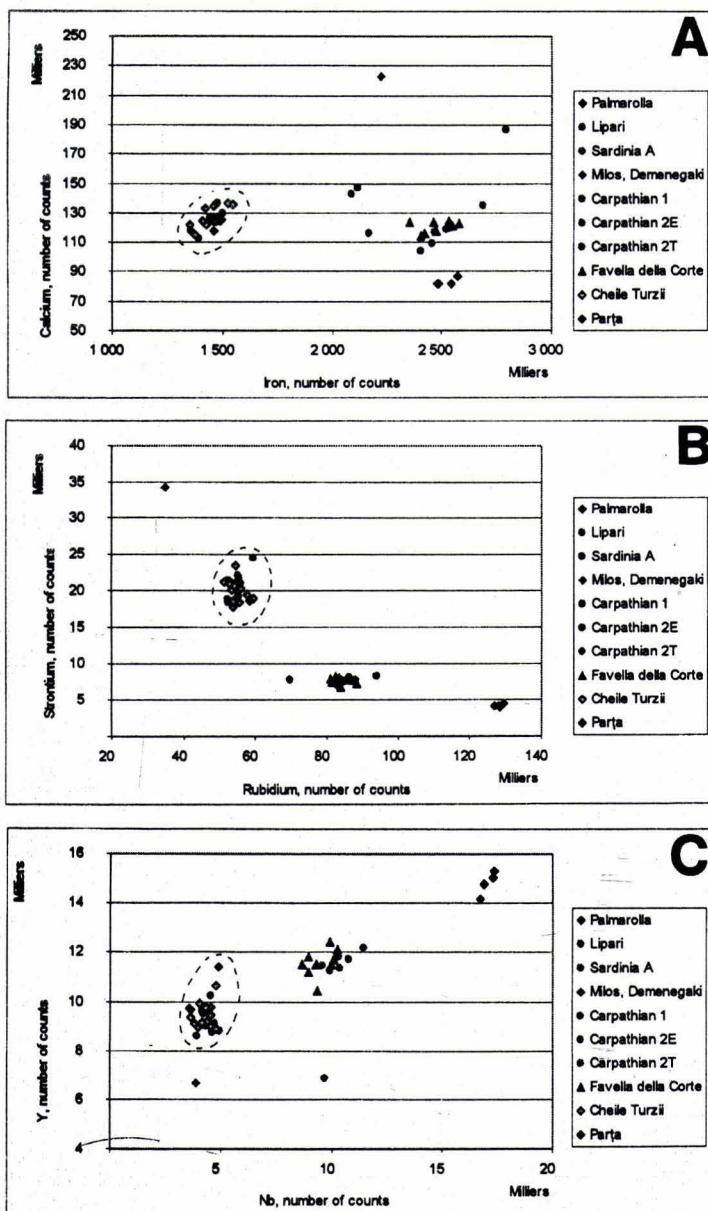


Fig. 7: Peștera Ungurească: diagram iron versus calcium (A), rubidium versus strontium (B) and niobium versus yttrium showing that all the Peștera Ungurească obsidian specimens analysed from Toulouse laboratory are of Carpathian 1 source (B. Gratuze, pers. comm. 2006)

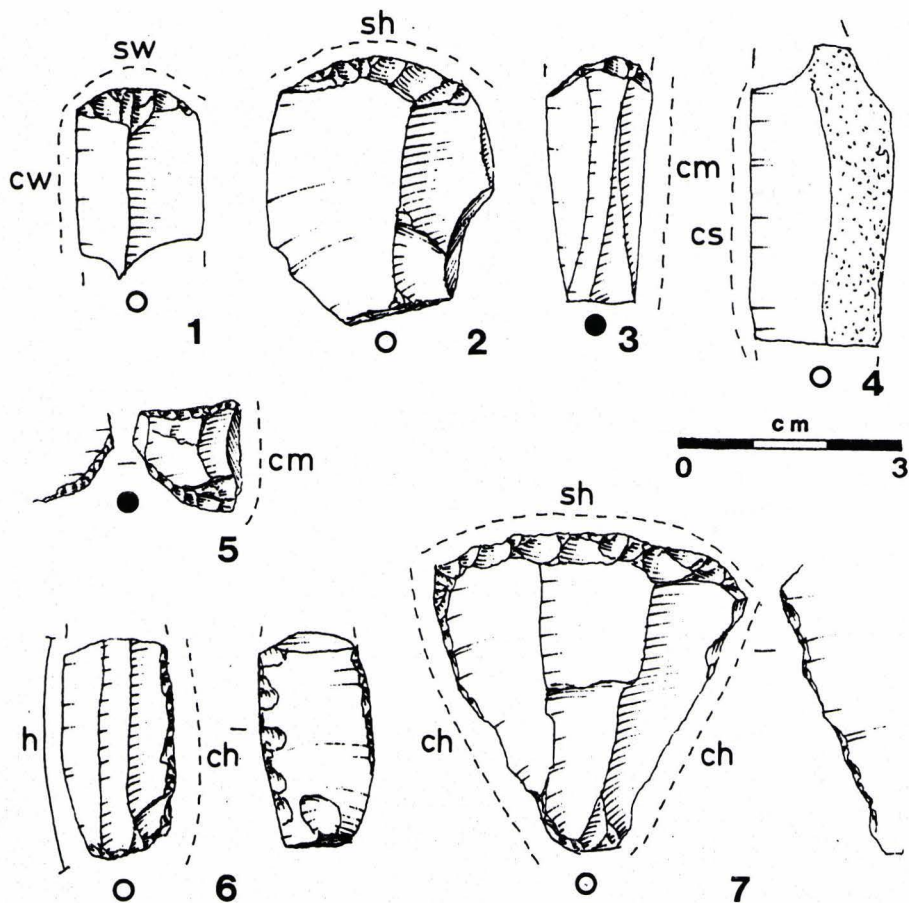


Fig. 8: Peștera Ungurească: chipped stone implements with traces of wear: End Scrapers (1, 2 and 7), Unretouched Blades (3 and 4), Rectangular Trapeze (5), Retouched Blade (6). 3 and 5 are of Carpathian 1 obsidian (dots), the remaining of Volhynian flint (circles). 1-5 from the Toarte Pastilate levels, 6 and 7 from the Petrești layer. For the details of their provenance see table 2. The abbreviations are: cw = cut wood, ch = cut hard, cm = cut medium, cs = cut soft, sw = scrape wood, sh = scrape hard, h = haft (drawings by P. Biagi and G. Almerigogna)

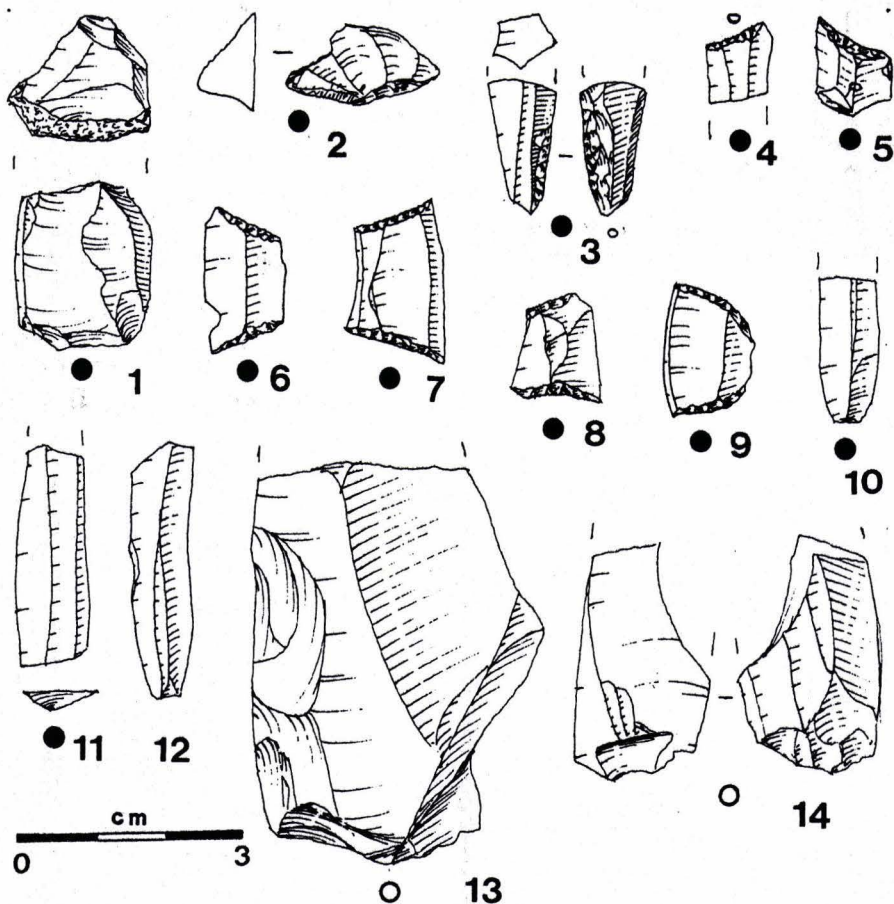


Fig. 9: Peștera Ungurească: chipped stone implements without traces of wear: Core (1), Core trimming flakelet (2), Borer (?) (3), Truncations (4 and 5), Isosceles Trapezes (6-9), unretouched bladelets (10-12), Unretouched flake (13), Splintered Piece (14). 1-10 are of Carpathian 1 obsidian (dots), 13 and 14 of Volhynian flint (circles), 12 of grey radiolarite. 2, 4-9, 10, 12 and 14 from the Toarte Pastilate levels, 11 and 13 from the Petrești layer and 1 and 3 „uncertain”. For the details of their provenance see table 2
(drawings by P. Biagi and G. Almerigogna)

THE ENEOLITHIC SETTLEMENT OF BISTREȚ, MEHEDINȚI COUNTY

Gabriel Crăciunescu

Keywords: *South-western Romania, Eneolithic settlement, Bodrogkeresztur Culture*

Rescue research was undertaken in the years 1984 and 1985 in the village of Bistreț (Deveselu commune, Mehedinți county), due to the fact that the local site had been disturbed by agricultural work.

The archaeological station is situated in the East of the village, in the place called *La punți* (*At the footbridges*), situated by *Mutu's Stream*, a small tributary of the Blahnița river. The research undertaken during the first year focused on an area 50 meters away from the stream and revealed the existence of Bronze Age and Roman habitations¹.

In 1985, due to the situation of crop cultures in the area, we began research on a surface situated several hundreds of meters from the first one, east of the above-mentioned stream and next to a large spring.

The trenches that were opened allowed us to uncover three dwellings covered with a mass of well-burned adobe, situated at the depth of 0.30 m (Pl. I). The three dwellings had the following dimensions: Dwelling no. 1 was 4.70 x 3.10 m; Dwelling no. 2 was 4.90 x 3.40 m; Dwelling no. 3 was 5.30 x 3.50 m. It must be mentioned that on the south-west side of Dwelling no. 1, in the square excavation made in order to uncover it completely, the charred remains of another dwelling appeared. The lack of workforce that we were confronted with during this excavation prevented us from extending our research. It is impossible to know how many more dwellings may have been discovered, probably charred as well due to the fact that they were located close to one another. Dwelling no. 1 was cut by the pit of an early Feudal pit house, whose base lay at a depth of 1.30 m, in comparison with the dwellings whose base was at the depth of 0.30 m. None of the three dwellings had a specially constructed floor, no postholes were found, and the location of the hearths could not be established.

Besides the pottery sherds we also found two clay weights, two flint tools and one made of obsidian, as well as several hand-mills made of river stone. Due to the intense fire that destroyed the dwellings, almost all the hand-mills were broken into several pieces, which had remained in place, unscattered. Such an item, located outside Dwelling no. 1, was preserved intact and had dimensions of 0.63 x 0.30 m.

There is a possibility that the fire may have spread from the west, as we found 10 broken vessels grouped in Dwelling no. 3, the westernmost one, as well as three more vessels whose sherds were scattered. In the following dwelling, No.1, there were three grouped vessels, as well as six other more or less complete vessels, and in Dwelling no.2, on the east side, we found one vessel only.

In what follows, the ceramic material in each dwelling will be presented, preserving the same west to east order.

In Dwelling no. 3 the following vessels were found:

1. Biconical vessel (Pl. II/1) with conical neck, supported by four legs. On the widest portion of the vessel there are four vertical handles. The dimensions of the item are the following: height (H) – 15.5 cm; rim diameter (RD) – 7.5 cm; maximum diameter (MD) – 18 cm.
2. Biconical vessel (Pl. II/2) with slightly flared neck and flat base. It has two handles which extend from the rim to the shoulder of the vessel. Each handle is framed by four applied bosses, and the base of the handles is linked by a line obtained by the impression of an oval-tipped tool. On the widest portion of the vessel, on each side, between the handles, there is a boss radially surrounded by impressions similar to those which form the above-mentioned circular line. The dimensions of the item are the following: H – 12.5 cm; RD – 16.5 cm; base diameter (BD) – 8 cm.
3. Biconical vessel (Pl. II/3) with slightly conical neck. Under the rim there is a finger-tipped cordon. The vessel has two vertical handles between which, at the same distance, there are two applied bosses. The base of the vessel is flat.
4. Rectangular vessel with rounded corners (Pl. II/5). The body has a biconical shape and the rim is decorated with finger-tip impressions. On the body there are four vertical bands that are

decorated with marked finger-tip impressions, and two horizontal handles. The dimensions of the item are the following: H – 13 cm; D – 31 cm.

5. Spherical vessel (Pl. II/4) with flat base and short conical neck. The whole body is covered in decoration consisting of lines made up by impressed dots combined with oblique fluting. Due to the fact that part of the body of the vessel is missing, we do not have a precise image of the initial decoration. The dimensions of the item are the following: H – 12 cm; RD – 8 cm; MD – 17 cm; BD – 7 cm.
6. Cup with a hollow flared stem (Pl. III/1). It has a biconical body with a slightly incurved upper part, and two downward curving ledge handles. The rim is slightly incurved. The dimensions of the item are the following: H – 16 cm; RD – 24 cm.
7. Spherical vessel with a flat base (Pl. III/2) with the rim missing. It has the following dimensions: H – 13 cm; MD – 28 cm; BD – 7 cm.
8. Conical vessel (Pl. III/3) with a flat base and a vertical band with marked finger-tip impressions on its body. The rim of this type of vessel is as a rule turned outward at a right angle.
9. Conical vessel (Pl. V/3), similar to the previous item, having the following dimensions: H – 12 cm; RD – 16 cm; BD – 8.5 cm.
10. Conical vessel (Pl. V/2), of a similar shape as the previous item, having the following dimensions: H – 11.5 cm; RD – 15.5 cm; BD – 9.5 cm.
11. Conical vessel (Pl. V/1) of the same shape as the previous item, having the following dimensions: H – 11 cm; RD – 15.5 cm. The base is missing.
12. Conical vessel (Pl. V/4) of the same shape as the previous items, with excised decoration on its body. It has the following dimensions: H – 11.5 cm; RD – 15 cm; BD – 9 cm.
13. Large vessel which could not be pieced together. It had finger-tip impressions on the upper part of the rim, while below the rim, around the neck, there was a line resulted from the impression of a tool with a semi-rounded tip (Pl. VI/1). Half-way down the neck there are two more lines similar to the one above.

In **Dwelling no. 1** the following vessels were found:

1. Conical hollow-stemmed cup with ledge handles (Pl. IV/1). The body of the cup had four ledge handles whose tips were oriented downwards. The dimensions of the item: H – 11 cm; RD – 20 cm.
2. Flat-based conical vessel (Pl. IV/2). It is similar to vessels of the same type found in Dwelling no. 3. It has the following dimensions: H – 12.5 cm; BD – 8.5 cm.
3. Bowl with two vertical handles (Pl. IV/3a-b). From under the rim to the base of the handles there is decoration in the shape of upward-pointing triangles whose outline is obtained by the deep impression of an instrument having an approximately triangular tip. The inside of the triangles is hatched with incised lines. The rest of the vessel's body is decorated with fine circularly-arranged incisions, which leave uncovered a wide band that links the two handles, as well as two other segments which start from this band in different places and finish below the place where the handles rejoin the body. Over this decoration other elements were traced, zigzagging lines which often intersect each other, obtained by applying strong pressure with a sharp tool, just as the triangles above.
4. Vessel with a spherical body (Pl. III/4), with two vertical handles which descend from under the rim up to the shoulder. It is decorated with a line which surrounds it at the level of the lower end of the handles, obtained by pressing a wide-tipped instrument into the soft paste. Below this line, on either side, on the widest portion of the vessel, there is an applied boss placed halfway between the handles. The dimensions of the item are the following: H – 14 cm; RD – 19 cm; MD – 22.5 cm.
5. Biconical flat-based vessel (Pl. V/5) with a square-cut rim and four vertical handles. Out of the handles, which are situated mid-way on the body of the vessel, only two diametrically opposed ones are pierced. The vessel has the following dimensions: H – 11.5 cm; RD – 12.5 cm; MD – 15 cm; BD – 9 cm.
6. Conical vessel of which only the bottom half is preserved, and which has the dimensions: H – 16 cm; BD – 10.5 cm.

7. Lid (Pl. V/7) with two handles on the upper part, fairly well preserved. It has the following dimensions: H – 3 cm; RD – 9.5 cm.
8. Fragment of a cup (Pl. V/6). Only the middle part is preserved.
9. Fragment of a biconical vessel (Pl. VI/5) whose body was decorated with slanting, then horizontal fluting. Some of the fluting was circular in shape. The vessel had small vertically pierced handles.

In Dwelling no. 2, only one vessel that could be pieced together was found (Pl. IV/4). It has the following dimensions: H– 8 cm; RD – 15.8 cm; MD – 17 cm; BD – 6 cm.

Apart from the items presented, several other groups of ceramic sherds were found, out of which no vessel could be pieced together, but about which some elements are worth mentioning.

In Dwelling no. 3, among various pottery sherds, we found a horseshoe-shaped handle, (Pl. VI/4) with finger-tip impressions on the outer side. Handles that are similar in shape also appear later, in the Coțofeni² and Verbicioara³ cultures. In the Cernavodă III culture, these horseshoe-shaped appliqués are positioned with the opening upwards or laterally, having mostly a decorative function⁴. A handle from a large vessel was also preserved (Pl. VI/2); it bent in a square angle and ended, at the upper end, in two pointed lugs which later broke off.

In Dwelling no. 1 was found the only vessel that was made of good quality paste and is finished with red engobe. Only two fragments of the vessel's neck were found. The latter was short and probably continued with a spherical body. It was covered by five lines parallel with the rim, impressed with the aid of a tool with an elongated tip. On the body there is incised angular decoration (Pl. VI/3). This type of decoration on the body of the vessel is also encountered in the Cernavodă III culture⁵. In the Coțofeni culture, the use of red engobe on the inside of vessels becomes almost general, as well as pottery decoration similar to the one mentioned here⁶. The vessel with fluted decoration found in this dwelling (Pl. VI/5) is similar to finds belonging to the Sălcuța culture in Banat⁷, with the mention that in the case of our vessel the handle is situated a little lower on the wall of the vessel. Stem cups (Pl. III/1, IV/1), although rare, are also encountered in the Sălcuța culture⁸.

The closest analogies to our materials are to be found in the pottery discovered in the Eneolithic cemetery at Ostrovul Corbului⁹, where forms very similar to our own finds at Bistreț, as well as very similarly decorated vessels, were unearthed¹⁰. Both our finds and those of Ostrovul Corbului are of the Bodrogkeresztur type.

As it has already been mentioned, such finds have been made at Ostrovul Corbului¹¹, about 11 km away from our station, but also in Banat at Ilidia, Cenad, Sânpetru German and Pecica¹². Similar discoveries exist in Hungary and on the territory of the former Yugoslavia.

Besides the already mentioned line decoration, it must be said that stem vessels as the one in Dwelling no. 3 (Pl. II/1) are to be found both in the Sălcuța culture and in the Coțofeni¹³ and Verbicioara¹⁴ cultures. The use of bosses in the decoration of vessel bodies (Pl. II/2, 3) is encountered in the Coțofeni, Glina and Verbicioara cultures, if we are to refer only to a limited period of time.

This brief presentation of our research at Bistreț aims first of all to draw attention upon some general elements of decoration and shape in vessels that are found within several different cultures. It is also meant to inform about Bodrogkeresztur type material discovered in another location in Western Oltenia besides Ostrovul Corbului, which will allow a more precise evaluation of the Bodrogkeresztur phenomenon in South-West Romania.

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NOTES

1. These materials have been published in *Tibiscum*, Caransebeș, 2003.
2. Roman P., 1976, Pl. 106/9; 117/11; Crăciunescu G., 2002, Pl. XII/1; XXII/2.
3. Crăciunescu G., 2004, Pl. LXXI/3; LXXII/4; LXXIV/3.
4. Tasić N., 1995, Pl. 5; XIV/2.
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ARCHAEOLOGICAL INVESTIGATIONS AT PECICA “ȘANȚUL MARE”: THE 2006 CAMPAIGN

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Keywords: Romania, Pecica, Bronze Age settlement, Dacian settlement

Introduction

The great settlement of Pecica “Șanțul Mare” is among the most important archaeological sites in the European Bronze Age. The site occupies a strategic location astride the river Mureș between the ore producing region of the Western Carpathian Mountains and the metal using societies of the Carpathian Basin and beyond. Similarly its deeply layered Bronze Age deposits have served as a chronological standard for the entire Bronze Age in Eastern Europe. In November of 2003, the Muzeul Banatului Timișoara, the Muzeul Județean Arad, and the Museum of Anthropology of the University of Michigan (USA) entered into a contract de colaborare to facilitate new archaeological research at the site. Following a brief planning visit in 2004, a major, multi-year field investigation was begun in 2005 with funding from the National Science Foundation (USA). The principle investigators for the research are Dr. John O'Shea (University of Michigan) and Dr. Florin Drașovean (Timișoara). Additionally, Mr. Pascu Hurezan (Arad), Dr. Alexandru Szentmiklosi (Timișoara), and Dr. Alexander Barker (University of Missouri) are also members of the research collective and were involved in the day to day management of the excavations. Other senior members of the research team include Dr. Sarah Sherwood, archaeogeologist, (University of Tennessee) and Dr. Susan Allen, archaeobotanist, (University of Cincinnati).

The research campaign in 2006 represented the initial season of layer-by-layer excavation at the site. This required the positioning of the excavation block adjacent to Stratigraphic Trench 1 (excavated in 2005)

which enabled excavation to progress into a visible profile (Figure 1) and to ensure that the excavation area was correctly located beneath the prior excavation blocks, so as to minimize damage to intact Dacian era site deposits. The specific goals of the 2006 season were 1) to establish the main excavation block, and excavate it to the level of intact Bronze Age deposits; and 2) to investigate the end of the Late Bronze Age sequence and determine the nature of the thick deposits separating the final Bronze Age from the later Dacian levels excavated in the 1960's. In addition to these specific goals, work in 2006 continued the program of off site geological testing and the development of a regional GIS site database.

Work at the site in 2006 began with the placing of a 10 x 10 m grid, which extended in a northerly direction off of Stratigraphic Trench 1 (Figure 1). Topsoil was cleared from an area of 12 x 12 meters, which included space for the excavation block and a passageway around the excavation area. The excavation block was divided into a series of 2 x 2m squares for the purposes of data recording and flotation sampling. With the removal of the topsoil, the edges of the prior excavation blocks and trenches could be clearly seen, as could a number of large pits, some dating to modern times, and others attributable to the Dacian occupation of the settlement. The exposure of these earlier trenches allowed the area of new excavations to be precisely located relative to Crisan's plan of the site (Figure 2).

The intact deposits found beneath Crișan's backfill are the continuation of his Dacian I layer. This relatively homogenous deposit was designated Layer B in the Trench 1 profile (O'Shea J., *et al*, 2005) and is roughly 1 meter thick. As reported in 2005, this layer was relatively homogenous and contained little cultural material. Immediately below the B layer are burned deposits confidently attributed to the Bronze Age.

In addition to the layer-by-layer excavation of the site units, visible features, primarily deep pits, were excavated as units using natural layers (Figure 3). A number of these pits represent episodes of looting at the site, but others are attributable to the Dacian occupation of the site and extended downward into Bronze Age Layers.

A total of nine new radiocarbon determinations were run, with an emphasis on dating the final Bronze Age occupation of the site, and establishing the age of deposits associated with the Dacian site levels (Table 1). One determination, Pecica Sample 06-113, dates a gray windblown deposit observed in an off-tell geological test unit. A second sample from

the same test unit, taken from a burned zone immediately beneath the gray layer had insufficient carbon for dating. An archaeomagnetic sample taken from the same deposit is pending. As will be discussed below, the two feature dates represent deposits attributable to the Dacian occupation of the site, while the remaining five dates can all be attributed to the final Late Bronze Age occupation. The very tight clustering of these Late Bronze Age dates suggests a rapid accumulation of site layers. This situation is ideal for the 'peel back' excavation strategy being employed, although the time spans may be too fine grained to be resolved by 14C dating.

Preliminary Results

Level-by-level excavation in Block 1 was completed into Stratigraphic Layer C and produced quantities of evidence relating to the prior excavation of the site, the character of the Dacian 1 (Layer B) deposits and additional information relating to the final Bronze Age occupation of the site.

The Archaeology of Archaeology

During the course of the 2006 field season, we were able to confirm the location of excavation blocks and trenches created during Crișan's excavations in the 1960's, as well as to observe trenches from yet earlier excavations. Overall, there was very good agreement between the published plans of excavation at Pecica and the traces of excavation features that were observed in 2006

In addition to confirming Crișan's site plan, the excavations also provided insight into modern damage to the site. Looters pits cover the modern surface of the site and raise questions about the kind and amount of damage this activity is producing. Within the area of Block 1, the pits are large but typically are not very deep and do not extend into Bronze Age site layers. This may suggest that vandals are targeting Dacian or Medieval remains at the site and are having a minimal impact on the Bronze Age deposits. Alternatively, it may simply mean that the looters quickly realize they are excavated unproductive backfill and move on to more productive portions of the site.

As excavation proceeded through Layer B, looter pits gradually gave way to Dacian era pits. Some of these were excavated by Crișan and others were not. Several of the unexcavated pits, including Features

1, 2, 3, 4, and 9, contained large chunks of intact site strata slumping into them (Figure 4). The layered material is similar to a standing block of strata (Feature 8) that was left in place during Crișan's excavation. The strata appear to represent remnants of the Dacian 2 level deposits. While it is possible that these deposits were pushed or otherwise moved into open pits during backfilling, it seems more likely that the slumping occurred in antiquity, and that the series of pits with these deposits contain intact and unexcavated material dating to the Dacian occupation. Most of the pits with slumped material are not represented in Crișan's plan of his excavation and, as will be described below, this interpretation finds further support from both carbon dates taken from the features and in the character of the faunal remains found within the pits.

A second, unexpected, find was the occurrence of a large number of well preserved, but disarticulated, human remains. The remains were pervasive in the fill of the excavation block and represented individuals of both sexes and all ages. More than 160 large human bones were mapped (Figure 5), representing at least 50 individuals.

As can be seen, the human bone was concentrated in four features. Three, Features 19, 20, and 29 are portions of Crișan's trenches, and the fourth, Feature 14, is a small pit that was excavated and backfilled during Crișan's excavations. It is clear from the pattern of spatial association, and from the manner in which the bones were deposited, which included a degree of sorting by element, that the human remains had been excavated by Crișan and had been cast back into the trenches in advance of backfilling. It is our assumption that the remains are attributable to the small medieval cemetery that was located on the site. The human remains were packaged separately from other site materials, and were transported to the Muzeul Județean Arad for biological analysis and curation.

Characterizing Stratigraphic Layer B

A major focus of the 2006 field season was Stratigraphic Layer B (Figure 6). This is the deposit termed Dacian 1 in Crișan's report (1978). Excavations in 2005 found the gray Dacian 1 layer to be massive but largely devoid of cultural material, and it was suggested that it might represent deposits associated with site preparation undertaken prior to major Dacian construction at the site. It was also hypothesized that the upper portion of

the final Bronze Age deposits were truncated and removed during this preparation phase, since the latest Bronze Age carbon dates are about 100 years older than expected. A preliminary analysis of micro-morphology samples collected in 2005 indicates that the gray layer is probably of aeolian origin, although it has been intensely bioturbated during the subsequent occupation on the settlement. The discovery in 2006 of similar appearing deposits in off-tell and off-site areas by the regional augering program, challenges the site preparation hypothesis, and raises the possibility that local drought-like conditions may have occurred at the end of the final Bronze Age occupation.

Once the backfill from Crișan's excavations was removed it was clear that the Dacian 1 layer had not been excavated to its base anywhere in the block. A lack of cultural materials in this layer no doubt contributed to Crișan's decision to halt excavation. At the base of the deposit, this changed. The base of the B1-3 level yielded a high concentration of ceramics and animal bone, laying flat as though representing an occupation surface. The character of these remains suggests a Bronze Age, rather than Dacian, association.

Radiocarbon dates collected from the B1-3 site level support a Bronze Age attribution for the level. Dates run on this layer from three different portions of the excavation block all yielded solid LBA dates (1720, 1730, 1880 BC) and are statistically indistinguishable from two sample run from the top of the burned LBA Layer C (1690, 1750 BC). Faunal evidence from this level (see below) also supports a Bronze Age association for the materials. These results undermine the idea of an intentionally created pre-construction layer, and are consistent with some manner of wind blown deposition beginning at, or just prior to, the end of the Bronze Age occupation of the site

While currently only a hypothesis, the potential role of local drought and environmental degradation at the end of the Bronze Age occupation is intriguing. The hypothesis might also help explain the current discrepancy in the end of the Bronze Age Mureș Culture, which seems to occur at Pecica a century before a similar abandonment at the down river settlement of Klárafalva Hajdova.

Faunal Exploitation at Pecica

While detailed analysis of the materials excavated during the 2006 field season is underway, a preliminary analysis of recovered faunal material from the site provides a tantalizing first glimpse of the subsistence

and productive economy of the site during the Late Bronze Age and Dacian periods. The results summarized here are based on a sample of 7399 bones and bone fragments identified during the 2006 field season, and represent materials recovered via opportunistic collection during excavation and from screened samples (*Nicodemus n.d.*). Small bones recovered during flotation do not figure in these estimates. The discussion here will briefly summarize differences in the site levels between the lower gray deposits, levels B1-2, B1-3, and the top of the burned Bronze Age layer C1 (table 2), and will then consider contrasts in the samples deriving from Dacian and Bronze Age layers. All values in the discussion that follows are based on the number of identified specimens (NISP).

Like other Bronze Age sites in the region, domestic mammals comprise the majority of the identifiable fauna in all these levels. When compared against all wild vertebrates, livestock make up between 66 and 73% of the animal remains. When domesticates are compared with wild mammals, there is a significant trend for livestock to increase and wild mammals decrease over time. A statistical analysis of residuals indicates that livestock do not change significantly over time, but that wild mammals are significantly more common in the Bronze Age deposits (C1) and are rarer than expected in the upper B1-2 deposits.

In terms of the particular species, pigs are common in all levels analyzed, while ovicaprids increase in assemblage proportion over time. Cattle and red deer both decrease in frequency over time. Fish, mostly carp, are relatively common at the site. The occurrence of fish as a proportion of the entire assemblages grows from 8% in C1 to 15-16% in layers B1-2 and B1-3. Horse, dog, aurochs, roe deer, wild boar, beaver, hare, fox, wolf, birds, and turtle all comprise less than 5% of the identifiable fauna by layer. The trends observed in site fauna may support an emerging model of environmental degradation and site abandonment at the end of the Bronze Age.

At a more general level, radiocarbon dates indicate that the large circular pits, Features 1 and 3, contain deposits derived from the Dacian Period.¹ Given the similarity in form, matrix, and general content, Features 2, 4, and 9 likely date to the same period. The fauna from these features has been analyzed together to gain a preliminary view of Dacian animal exploitation. This is then compared against general patterns found in the Bronze Age layers B1-3 and C1 to examine differences in species utilization and butchery patterns (Table 3).

Despite the similar appearance of the five large Dacian pits, the fauna recovered from them is extremely varied in terms of the species represented and their relative abundance. For example, pig remains comprise 79% of the identifiable fauna in Feature 2, but only 9% in Feature 9. The proportions of ovicaprids, cattle, red deer, fish, and mollusks are also highly variable. Combining the features provides a more representative view of the Dacian material.

The Bronze Age fauna from levels B1-3 and C1 are similar to one another both for species present and their relative abundance. The differences between the Dacian and Bronze Age fauna are highly significant.² In the Dacian pits, pig, fish, and snails are significantly more frequent than expected while ovicaprids, cattle, dog, red deer, and mussels are significantly under-represented.

Domesticates are more abundant in the Dacian material, especially when comparing only mammals. The percentage of domesticates for the Dacian fauna are 57.8%, 75.2%, and 94.1% when compared against all wild fauna, wild vertebrates, and wild mammals respectively. For the Bronze Age, the percentages are 46.5%, 66.6%, 77.5%. As expected, the same domestic species are observed in both periods except for domestic chicken, which is only found in the Dacian sample. The wild fauna differs considerably. As mentioned above, red deer are infrequent in the Dacian material. Additionally, aurochs, beaver, wels, catfish, pond turtle, and wild birds are completely absent, indicating relatively low species diversity, despite the larger overall sample size. The only wild species found exclusively in the Dacian material is pike.

In addition to the dissimilarity in species composition, there are striking differences in butchery patterns. In the entire Bronze Age faunal assemblage, there are only three bones that show evidence of butchering in terms of cut, scrape, or chop marks (.05%). This is a common pattern at other pre-Iron Age sites, and is indicative of a butchery method which cuts through joints, rather than through the bones themselves. The overall level of processing is relatively low, as demonstrated by the rarity of cut marks at major ligament and tendon insertion points.

In contrast, cut bones are relatively common from the Dacian pits, comprising over 2% of the total assemblage, which is 42 times greater than in the Bronze Age. Cuts are frequent around areas of connective tissue indicating more intense processing, including meat removal across joints and element

separation. More importantly, hack and chop marks through the bones themselves are common, in contrast to the Bronze Age pattern of cutting between joints. For the Dacian material, hack marks are found on a red deer pelvis and on numerous vertebrae and ribs. These ribs and vertebrae are most likely pig given the abundance of this species in Feature 2, where most of these specimens were found. The cervical and lumbar vertebrae of several individuals were cleanly chopped along the sagittal plane (vertically). In contrast, the thoracic vertebrae are intact, but their corresponding ribs were chopped near their heads, separating the ribs into left and right racks. This heavy-duty chopping through bones is much easier with iron tools, which likely explains the absence of this method in the Bronze Age material.

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NOTES

1. There may be some mixing in the uppermost layers of some of these features. Nonetheless, it is all post-Bronze Age and will be examined together. The internal layers are also combined to maintain a sufficient sample size for analysis. Future work will more closely examine fauna within stratified features.
2. Chi-square 258.06, df=17, p=.000.

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Table 1: Radiocarbon determinations collected during the 2006 campaign

Sample Number	Site Context	Age bp*	Calibrated intercept	Calibrated Range**
06-105	E18N10 B1-1	3440 +/-40	1740 BC	1880-1650 BC
06-113	Geology Test 3, IL-1	410 +/- 40	AD 1460	AD 1430-1630
06-115	E10N18 B1-3	3430 +/-40	1730 BC	1870-1630 BC
06-116	E10N14 B1-3	3520 +/- 40	1880 BC	1940-1740 BC
06-118	Feature 1, IL-1	2170 +/- 40	200 BC	370-100 BC
06-126	Feature 3, IL-2	2100 +/- 40	110 BC	200-30 BC
06-129	E14N12 B1-3	3240+/- 40	1720 BC	1870-1620 BC
06-133	TR-1, N profile floor	3450 +/- 40	1750 BC	1880-1670 BC
06-136	E12N14 C1a	3400 +/- 40	1690 BC	1760-1610 BC

* Conventional radiocarbon age, corrected for $^{13}\text{C}/^{12}\text{C}$ ratio

** 2 sigma calibrated result (95% probability)

Table 2: Relative Frequency of Vertebrate Species by Context

Relative Frequency of Vertebrate Species by Context (Non-Mammal Species Combined)		B1-2	B1-3	C1	F1	F2	F3	F4	F9	F14	F16	F20	F35	F39	F40	F42
<i>Sus scrofa</i>	Pig	30.5	19.3	25.0	44.3	89.1	31.9	21.6	20.4	38.5	23.7	31.6		34.4	18.5	14.3
<i>Ovicapria</i>	Ovicaprid	29.4	23.5	20.0	9.6	2.4	23.4	10.8	29.6	46.2	23.7	10.5	20.0	28.1	33.3	28.6
<i>Bos taurus</i>	Cattle	9.8	15.1	18.9	1.7	0.9	12.8	2.7	11.1		23.7	21.1	20.0	6.3	1.9	
<i>Canis familiaris</i>	Dog	1.4	4.5	3.3		0.5			1.9						11.1	
<i>Equus caballus</i>	Horse	2.2	3.2	1.1	0.9	0.5			7.4						1.9	
<i>Cervus elaphus</i>	Red Deer	9.2	13.5	18.3	4.3	1.4	12.8		3.7	7.7	5.3	36.8		21.9	7.4	
<i>Capreolus capreolus</i>	Roe Deer	0.8	0.6	3.9			4.3						20.0		3.7	
<i>Sus ferrus</i>	Wild Boar	0.3	0.3	0.6	0.9	0.5										
<i>Bos primigenius</i>	Aurochs		0.3													
<i>Castor fiber</i>	Beaver		1.3	0.6										3.1		14.3
<i>Lepus europaeus</i>	Hare		1.0			0.5		2.7								
<i>Vulpes vulpes</i>	Fox	0.8														
<i>Canis lupus</i>	Wolf	0.3														
Small Rodents	Small Rodents		1.0		3.5			2.7	3.7							
Fish	Fishes	15.1	15.8	7.8	34.8	2.4	14.9	59.5	22.2	7.7	21.1		40.0	6.3	22.2	42.9
Birds	Birds			0.6		1.9					2.6					
Turtle	Pond Turtle		0.6													
TOTAL		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 3: Comparison of mammalian fauna from Dacian and Bronze Age layers

Species	NISP Dacian	NISP Bronze Age	% NISP Dacian	% NISP Bronze Age
Pig	273	105	59.7	21.6
Ovicaprid	47	109	10.3	22.4
Cattle	17	81	3.7	16.6
Hores	6	12	1.3	2.5
Dog	2	20	0.4	4.1
Chicken	4	0	0.9	0
Red Deer	16	75	3.5	15.4
Roe Deer	2	9	0.4	1.8
Wild Boar	2	2	0.4	0.4
Aurochs	0	1	0	0.2
Beaver	0	5	0	1.0
Hare	2	3	0.4	0.6
Fish	86	63	18.8	12.9
Turtle	0	2	0	0.4
Wild Bird	0	1	0	0.2

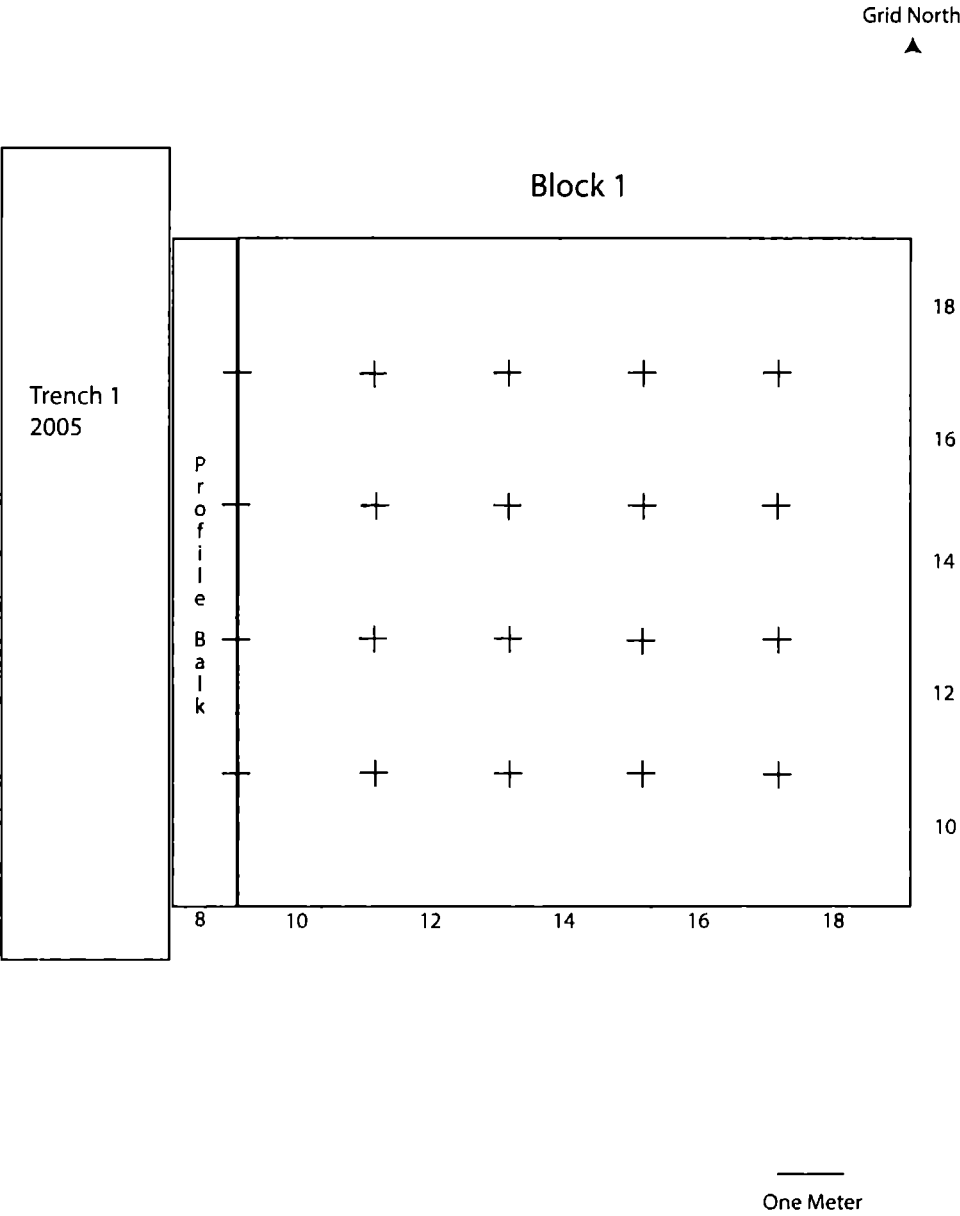


Fig. 1: Plan of Excavation Block 1 and its relationship with Stratigraphic Trench 1

PLANUL GENERAL AL SĂPĂTURILOR DE LA „ȘANȚUL MARE”

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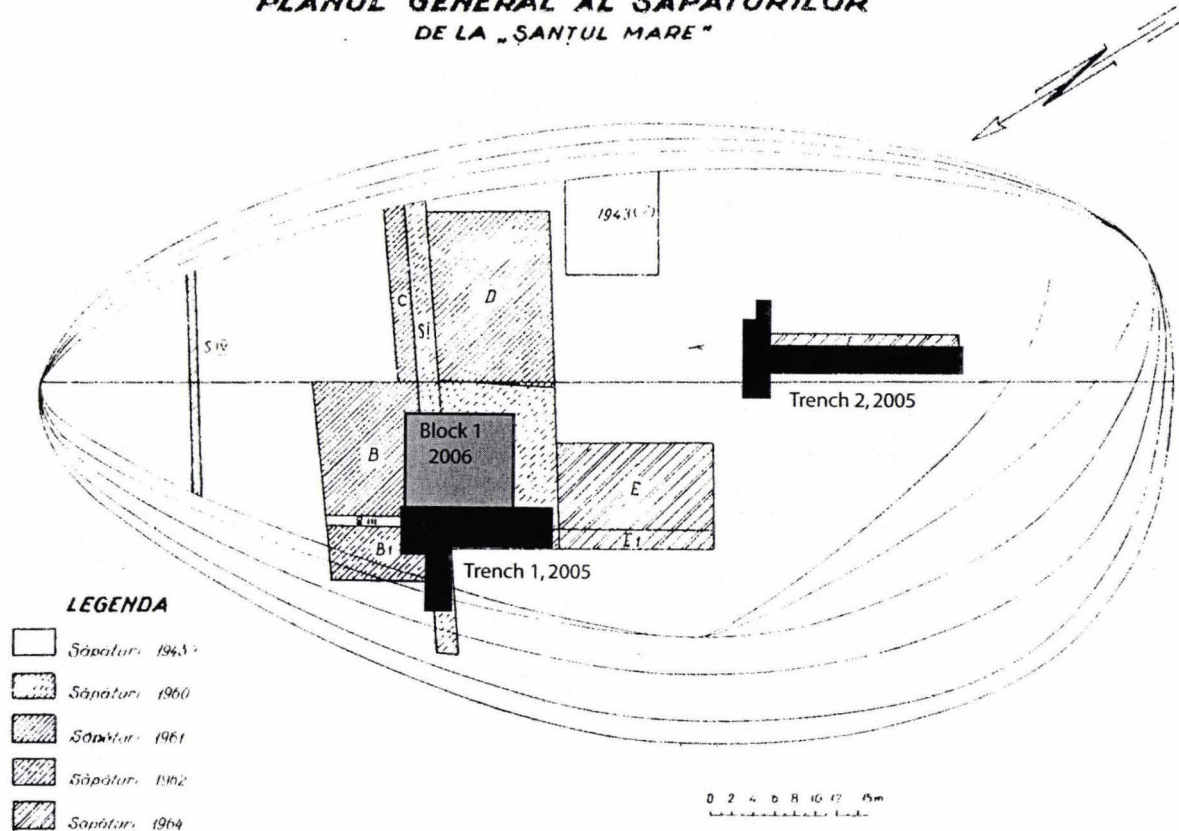


Fig. 2: Location of 2006 excavation units in relation to Crisan excavation blocks at Pecica "Șanțul Mare"

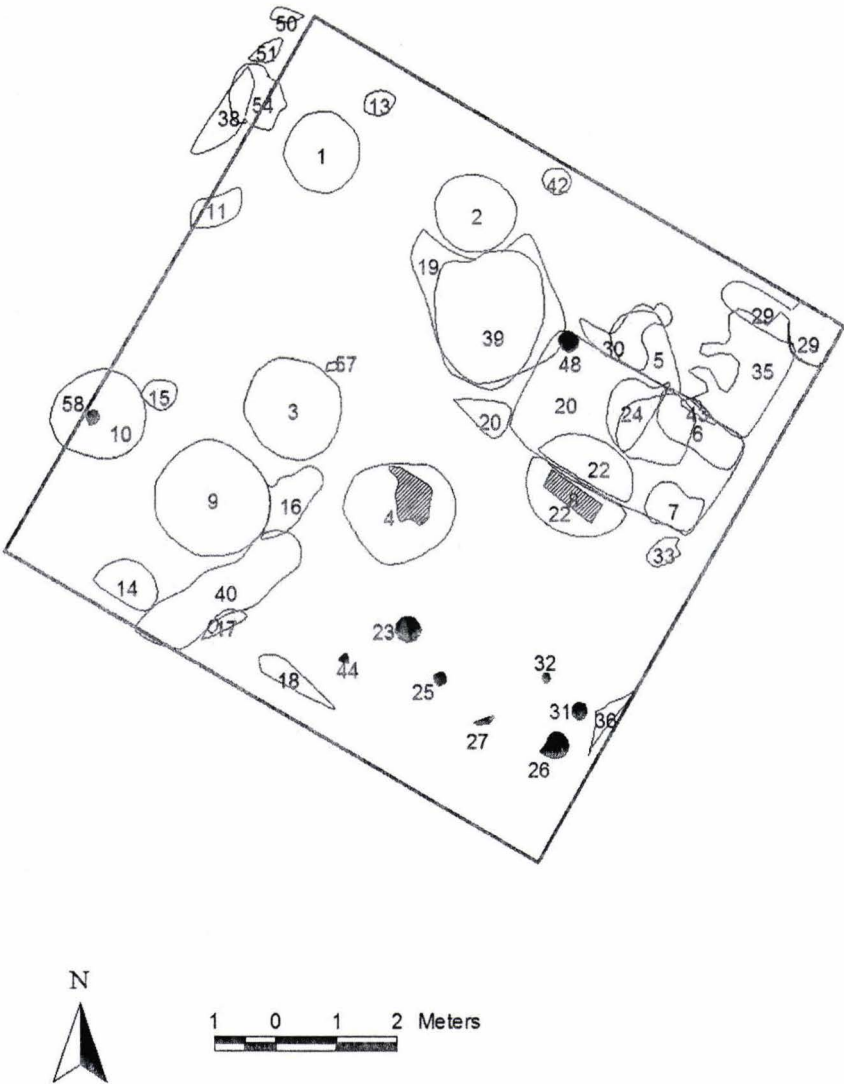


Fig. 3: Distribution of site features within Block 1



Fig. 4: Intact strata slumping into Feature 4

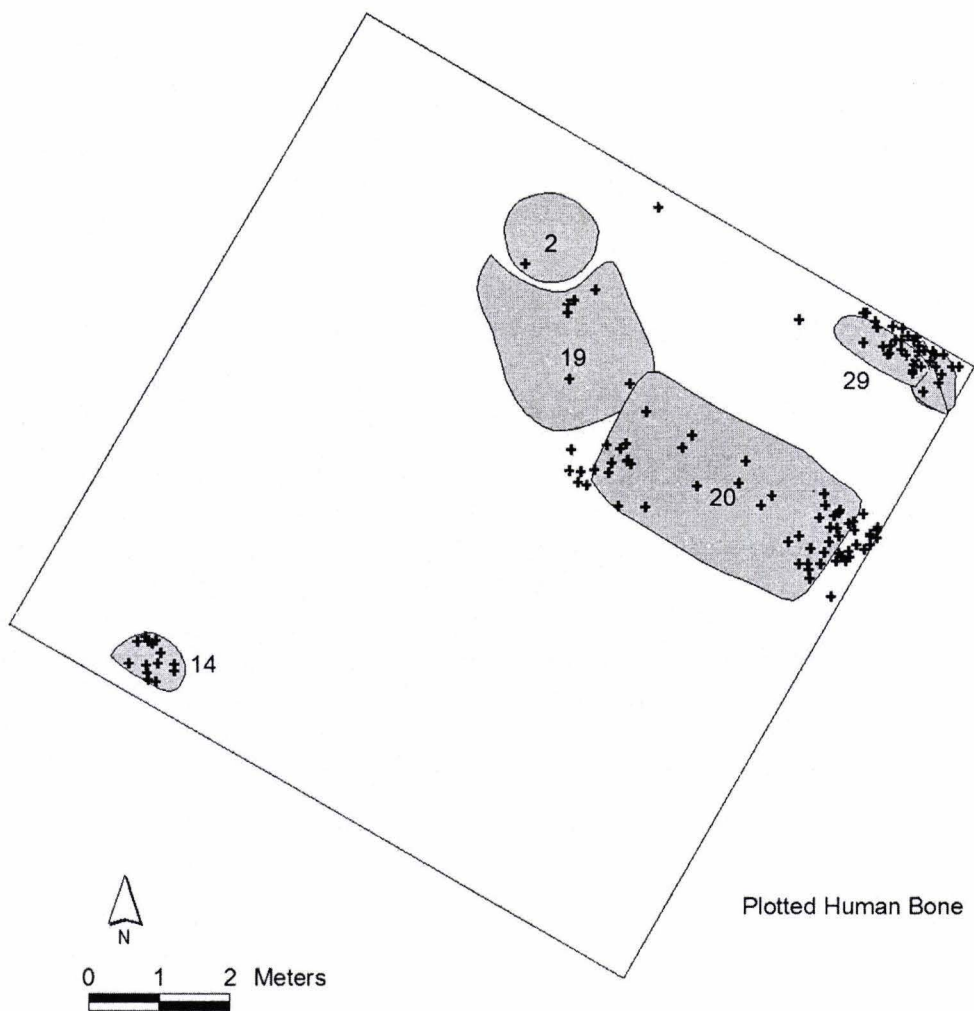


Fig. 5: Distribution of human remains and their relationship to Crisan excavation features



Fig. 6: Layer B/Dacian 1 as visible in Stratigraphic Trench 1

THE RELATIONS OF THE CRUCENI-BELEGİŞ CULTURE WITH THE ŽUTO BRDO–GÂRLA MARE CULTURE

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Keywords: *Romania, Banat, Late Bronze Age, Cruceni-Belegiș Culture
Žuto Brdo–Gârla Mare Culture, relations*

The archaeological investigations concerning the Bronze Age within the area of the Middle and Lower Danube demonstrated the existence of an ethnical-cultural complex characterized through a series of common elements that suggest the relationship among the different ethnical-cultural manifestations within this area. The main common denominator is the ceramics whose ornamentation consists in motifs executed through printing, incision, notches and successive stitches. The motifs were inlaid with white substance. The funerary common ritual, respectively the cremation, the anthropomorphical statues, the bird-shaped representations and the clay little bells suggest similar religious beliefs.

Szeremle-Bijelo Brdo cultural group

The origin of the ornamentation of the ceramics, used initially within a narrow area, respectively in Transdanubia, are difficult to be explained. The archaeological investigations in Hungary in the second half of the 20th century revealed the existence, within this huge complex of inlaid ceramics, of two large areas: the northern-Pannonian inlaid ceramics where the Esztergom and Veszprém cultural groups developed, and, respectively, the southern-Pannonian ceramics of which the Szekszárd and Pécs¹ groups were characteristic.

As a consequence of the pressure exercised by the communities of the Tumular Culture (*Hügelgräberkultur*), warrior populations coming from Central Europe, to which the hiding of the bronze hoards from Koszider² horizon are hypothetically related, communities of the northern-Pannonian inlaid ceramics culture (Esztergom group) leave Transdanubia and they

withdraw to the south along the valley of the Sió river, occupying the area between the Danube and the Tisza³. The movement to the south of the communities of the northern-Pannonian inlaid ceramics stimulated, but at a reduced extent, elements from the southern area of Transdanubia, too. The grafting of the elements of civilization typical of the communities of the northern-Pannonian inlaid ceramics with local ones (Gerjen, Vatina and Verbicioara) determined the appearance of a new ethnical-cultural manifestation known especially as „Szeremle group”⁴, and recently as „Szeremle-Bjelo Brdo group”⁵ in the archaeological literature.

Generally, it is admitted that the formation of the Szeremle-Bjelo Brdo group took place during the Middle Bronze, in the period of transition from Bz. A₂ to Bz. B₁. The evolution of these communities was considered as being extremely short, respectively to the end of the Bz. B₁ phase in P. Reinecke's modified chronological system⁶. But, the presence of certain ceramic materials typical of the Szeremle group in the region controlled by the Cruceni-Belegiš culture suggests a little bit longer evolution of the communities of Szeremle-Bjelo Brdo type. Their end took place in the period in which the first phase of the Cruceni-Belegiš culture was developing, respectively at the beginning of the so-called „Reinecke” Bz. B₂ phase⁷.

The discoveries typical of the Szeremle group are concentrated along the Danube, between the river mouth of the Sió and that of the Tisza. The eastern limit was the last narrow path of the Danube, at least to Liubcova, unless even to Ostrovu Corbului⁸. The short evolution of this cultural group played a very important role in the genesis of some new ethnical-cultural manifestations. One of them was the Žuto Brdo-Gârla Mare culture, which developed from the Szeremle communities, that were coming down to the neighbouring of the western side of the Carpathians⁹. The Szeremle cultural group is considered, in the same time, one of the elements that actively participated to the formation of the Cruceni-Belegiš culture.

Žuto Brdo-Gârla Mare Culture

The area of spreading of the Žuto Brdo-Gârla Mare culture includes the Danubian sector from the confluence of the Danube with the Sava to the confluence of the Danube with the Iskŭr. The most western discovery is

that one from Kovin, and the most eastern finding is, for the moment, that one from Corabia¹⁰. The location of the discoveries of Žuto Brdo-Gârla Mare type point out the fact that the communities of this culture occupied the both banks of the Danube preferring the aits, the holms and the terraces from the river's vicinity, that had been not only food source, but also a major commercial thoroughfare of the prehistory.

The early phase of the Žuto Brdo-Gârla Mare culture can be situated, the most probably, in the MD I stage, that means at the end of the Bz. A phase in P. Reinecke's chronological system. The classic phase of this culture is prolonged into the MD III stage, moment in which the first phase of the Cruceni-Belegiš culture evolves, which started later its evolution. The imports from the two cultural environments plead for the co-existence of the two cultures starting from the Bz. B₂-C phase in P.Reinecke's modified system¹¹. According to M. Șandor-Chicideanu, the final phase of the Žuto Brdo-Gârla Mare culture can be dated on the base of certain bronze objects found in the horizon II from Balej, these objects being „typical of the Br.D/SD I phase (Br.D meaning the 12th century)”¹². The end of the Žuto Brdo-Gârla Mare culture is marked by the appearance of the Bistreț-Ișalnița cultural group along the Inferior Danube, which, even if it is originally connected to the Žuto Brdo-Gârla Mare culture, constitutes a distinct ethnical-cultural manifestation that makes the transition to the Early Hallstatt.

Cruceni-Belegiš Culture

The Cruceni-Belegiš culture was considered to be, initially, the result of a long life together and cultural interpenetration of Periam-Pecica, Otomani and Gârla Mare type, on the Vatina culture background¹³. The recent investigations have brought significant contributions concerning the origin of the Cruceni-Belegiš culture and its début moment. The Cruceni-Belegiš culture was formed on the basis of a mixture of elements of *Litzenkeramik* type belonging to the Gumtransdorf-Drassburg group¹⁴ and inlayed ceramics of Szeremle type, dislocated by the pressure of the communities of the Tumular Culture (*Hügelgräberkultur*) from Central Europe. That mixture was grafted on the local background of Vatina type¹⁵. The communities of this culture had direct contacts with the communities of the inlayed ceramics from Transdanubia¹⁶. This matter was proved by

the numerous archaeological findings from the area of the Vatina culture, as for example those from Kać-Popov Salaš¹⁷, Vatin, Vinča, Gradina on Bosut, in the grave from Vizić-Golokut¹⁸, Peciu Nou-Stietzel¹⁹, Foeni-Gomila Lupului I²⁰. An early contact of the inlayed ceramics communities with the local communities of Vatina type is met in the region of the Middle Danube, at Hrtkovci-Gomolava, in level IVa, preceeding the phase I of the Cruceni-Belegiš culture (level IVb)²¹. The contact of the Mureş culture with the inlayed ceramics communities is suggested by the ceramic fragments decorated with white substance discovered along the lower course of the Mureş, at Pecica-Şanţul Mare²².

Partly contemporary to the new Cruceni-Belegiš culture with which it was contiguous in south, the Tumular Culture (*Hügelgräberkultur*) from the Pannonian Plain would contribute to the completion of this culture. Beside the tumular influences, we have to remind those that come from the Urnfield area with which the Cruceni-Belegiš culture got contemporary. The contacts with the Zagreb²³ and Csorva²⁴ groups - considered also the southern vanguard of the Gava²⁵ culture - followed after the first contact with Virovitica group.

The borders of the Cruceni-Belegiš culture are relatively well delimited. The communities of these ethnical-cultural manifestations were spread on a large area that included, generally, Eastern Slavonia, Bačka, Srem and Banat (excepting the north-western corner, that seems to have been temporarily controlled by the Tumular Culture communities) (Pl. I). The presence of this culture north to the Drava is not certified for the moment, but the region of Baranja has not been sufficiently investigated²⁶. The repertory of the findings from the phases I-II points out a feature specific to this culture, respectively its spreading in the plain regions, on the banks of the rivers. Those places constituted favourable conditions not only for practising agriculture, but also for breeding animals. Following the geographical disposing of the archaeological sites, in concordance with the evolution phases of the Cruceni-Belegiš culture, there were noticed few spreading directions. The causes of that movement of populations of Cruceni-Belegiš type were, probably, of economic order (the contacts with the Mycenaean world) and they were maybe the result of a pressure coming from the Pannonian Plain (the so-called „elements of Csórva-Bobda I type”)²⁷.

The differences existing in the technology of ceramics manufacturing and burning, as well as in the way of ornamentation determined certain archaeologists²⁸ to divide in a erroneous manner that cultural manifestation into two distinct cultures, the first one (**Cruceni-Belegiš I**) characterized through the "pseudo-corded" ceramics, and the second one (**Cruceni-Belegiš II**) through the fluted ceramics. The unitary evolution of the Cruceni-Belegiš culture in the plain region of Banat ended, according to M. Gumă, through the appearance of some ethnical-cultural manifestations as for example Bobda II (Bobda-Csorva) and Susani. The extension to east of the Cruceni-Belegiš communities in the phase II, and the constant communication that the Danube was mediating permitted the appearance of some ethnical-cultural manifestations with strong Cruceni-Belegiš traditions as Ticvanu Mare-Karaburma III and Moldova Nouă-Liborajdea.

The utilization of different terminologies and of P. Reinecke's modified system²⁹, sometimes in wrong concordance with the different internal periodizations of the Cruceni-Belegiš culture³⁰, determined me to include here just the assignment of the archaeological materials discovered in site to one of the phases of evolution of the Cruceni-Belegiš culture. I used the chronology proposed by F. Gogâltan³¹ in parantheses. It coincides, at a large extent, with the phases of evolution of this culture as well as with the series of bronze hoards chronologically included by M. Petrescu-Dîmbovița³² and rectified by M. Gumă³³. Thus, **Late Bz. I** corresponds to the period Bz. B₂ – C in P. Reinecke's modified system and it starts somewhen before 1500 BC. **Late Bz. II** corresponds to the so-called period Reinecke Bz. D. The continuous evolution of the cremation necropoles from Beograd-Karaburma, Timișoara-Fratelia, Peciu Nou, Sarvaș-Gradac etc., as well as the synchronisms that could be noted among the different phases of their internal evolution (for example Cruceni II – Bobda I, Timișoara-Fratelia – Ticvanu Mare-Fema no. 2 – Beograd-Karaburma III), suggest the adaptation of the chronology proposed by Fl. Gogâltan to the ethnical-cultural realities from Banat at the end of the 2nd millennium BC. In my opinion, the period **Late Bz. II** should be prolonged to the middle of Ha. A₁ phase. The last phase of the Bronze Age, **Late Bz. III**, covers, very probably, the second half of the period Ha. A₁ and the period Ha. A₂. The **Iron Age I** period is synchronous with Ha. B₁ period, when the so-called penetration of the Gáva culture in Banat marks the beginning of the First Iron Age.

If it is accepted that a part of the so-called groups of transition formed on the basis of a direct contribution of the Cruceni-Belegiš populations (Bobda/Bobda II, Ticvaniu Mare–Karaburma III and Moldova Nouă-Liborajdea), represents regionalizations of the phase II of the Cruceni-Belegiš culture, in my opinion, these groups represent the third – and the last – phase (**Cruceni-Belegiš III**). This phase constitutes, at the same time, the period of transition towards the first Iron Ages whose beginning is marked by the penetration of Gáva communities in Banat, on the brink of the 2nd - 1st millennia BC. (1050/1000 BC)³⁴.

East to the Carpathians, as a consequence of the strong influences of Cruceni-Belegiš type, grafted on the local background of Žuto Brdo-Gârla Mare type, the Hinova-Mala Vrbica group³⁵ appears. The archaeological investigations along the lower course of the Danube, downstream of the Iron Gates, delimited the existence of the Bistreț-Ișalnița cultural group³⁶. That, even if it was originally connected to the Žuto Brdo-Gârla Mare culture, was constituted in a distinct ethnical-cultural manifestation that followed to the Žuto Brdo-Gârla Mare culture, making the transition towards the Early Hallstatt³⁷. The genesis of that cultural group, according to I. Chicideanu, was due to some western influences of type Cruceni-Belegiš, grafted on the local background Gârla Mare³⁸. The evolution of that group started somewhere in the interval Reinecke Bz.D (after 1250 BC) and ended „around 1100 BC”³⁹ (Ha.A₁). The chronological parallelism with the phase II of the Cruceni-Belegiš culture is provided by the similarities among the archaeological materials characteristic of the Bistreț-Ișalnița group and those discovered at Hrtkovci-Gomolava (level IVc) and Dalj-Livadice, in the levels corresponding to the phase II of the evolution of the Cruceni-Belegiš culture⁴⁰.

The Relations of Žuto Brdo-Gârla Mare Culture with Cruceni-Belegiš Culture

The vicinity between the Cruceni-Belegiš and Žuto Brdo-Gârla Mare cultures determined the achievement of cultural contacts. This fact was pointed out through the imports discovered in the spreading areas of the two cultural manifestations (Pl. X). These contacts were observed in several necropoles and settlements from Banat and the region of the Middle Danube (in Srem and Bačka).

The archaeological investigations in the area of the ex-stables of C.A.P. Cruceni (Timiș County), started in 1958 by M. Moga and continued, later, by O. Radu in 1968, emphasized the existence of a cremation necropolis belonging to the Cruceni-Belegiš culture (Pl. X/7)⁴¹. The inventory of the graves no. 11 (Pl. II/2-4), no. 32 (Pl. II/1) and no. 96 (Pl. III/1-2), included in the phase I of the Cruceni-Belegiš culture, contained vessels and objects whose ornamentation had been executed with incised and printed motifs inlaid with white substance. The bowl from the grave no. 11⁴² (Pl. II/3a-b), through its shape and inlaid ornament, belongs to the developed phase of the Szeremle-Bijelo Brdo group⁴³. This fact pleads for dating this grave among the earliest burials within this necropolis. In the inventory of the grave no. 96, a bowl of type S.4 was discovered, similar both to those characteristic of the developed phase of the Szeremle-Bijelo Brdo group, and to those typical of „Dubovac group”⁴⁴ (Pl. III/2a-b). Another import within the necropolis from Cruceni is the bird-shaped clanging toy discovered in the funerary inventory of the grave no. 32⁴⁵ (Pl. II/1). The bird-shaped clay representation still keeps the white inlay and it has good analogies with the object discovered in the settlement from Mala Vrbica⁴⁶.

The imports of Žuto Brdo-Gârla Mare type were discovered also in other Cruceni-Belegiš necropolises from Banat. In the funerary inventory of the grave no. 48, found in the cremation necropolis from Peciu Nou (Timiș County, Pl. X/33)⁴⁷, a white inlaid cup in fragmentary state (Pl. IV/1a-c).

The rescue excavations from the perimeter of the ancient pit of borrowing clay from the vicinity of the locality of Voiteni (Timiș County) emphasized the existence of a cremation necropolis belonging to the Cruceni-Belegiš culture (Pl. X/46)⁴⁸, in which, in the inventory of the grave no. 16 from 1998, is mentioned the discovery of an inlaid cup⁴⁹, similar to that one from the inventory of the grave no. 48 from Peciu Nou. The rescue investigations permitted the achievement of a short sound trench in the Cruceni-Belegiš settlement, situated in the close vicinity of the necropolis. Beside an early medieval necropolis, there was discovered a cultural layer with archaeological materials of Cruceni-Belegiš type. Among these there are noted imports from the classic phase of the Žuto Brdo-Gârla Mare culture⁵⁰ (Pl. V/1-3).

Žuto Brdo-Gârla Mare imports were noted also in the settlements of the Cruceni-Belegiš culture from Banat, respectively in those from Foeni-

Gomila Lupului II and *Deta-Dudărie*, findings that complete the general presentation of cultural exchanges and influences from the second half of the 2nd century BC.

The Cruceni-Belegiș settlement from Foeni-*Gomila Lupului II* (Timiș County, Pl. X/17) is located in the close vicinity of the *tell*-settlement belonging to the Vatina culture from the same site (Foeni-*Gomila Lupului I*), archaeological site in which, beside the characteristic materials of this culture an inlayed ceramic fragment was discovered too, an import belonging, probably, to the Szeremle-Bijelo Brdo group⁵¹. This discovery illustrates the existent contacts between the two ethnical-cultural manifestations from the end of the Middle Bronze. The contacts with the inlayed ceramics world are continued also later by the communities of the Cruceni-Belegiș culture. This fact was found in the settlement of this culture situated in the close vicinity of the *tell* belonging to the Vatina culture⁵². In the pit-dwelling house no.2/2000, belonging to the phase I of this culture, there were discovered inlayed ceramic materials characteristic of the classic phase of the Žuto Brdo-Gârla Mare culture (Pl.V/4-12, VI/1-3). Similar materials were discovered also in the arranged flooring⁵³ of the pit-dwelling house no.1/2000, belonging to the IInd phase of the Cruceni-Belegiș culture (Pl. VI/4).

The presence of numerous archaeological sites in the boundaries of the town of Deta has been mentioned since the end of the 19th century (Pl. X/11)⁵⁴. The rescue excavations executed at *Deta-Dudărie* (Timiș County)⁵⁵ in 1999, 2000 and 2005 uncovered a settlement of the Bronze Age superposed by a succession of medieval settlements⁵⁶. Within the archaeological complexes, there were discovered ceramic fragments decorated with pseudo-corded, incisions and flutes, as well as inlayed ceramics with white substance (Žuto Brdo-Gârla Mare). In the pit dug for the sustaining post of the factory G.5 there become outlined a conical large food pit with long cylindrical neck (in the feature C.9). In the brown-yellowish clayed filling there were discovered ceramic fragments of the Cruceni-Belegiș culture. There were decorated with vertical, oblique and in garland flutes. Beside these, there were also found ceramic fragments inlayed with white substance typical of the classical phase of the Žuto Brdo-Gârla Mare culture⁵⁷ (Pl.VI/1-5). In the pit dug for the sustaining post of the factory G.7, in the filling of the feature C.13⁵⁸ (an early medieval pit-dwelling house), there were found ceramic fragments typical of the

Cruceni-Belegiš culture, as well as an import from the classic phase of the Žuto Brdo-Gârla Mare culture (Pl. VI/10). In the pit dug for the sustaining post of the factory G.8, in the filling of the feature C.14 (a food storage pit), beside ceramic materials typical of the Cruceni-Belegiš culture, there were also discovered ceramic fragments inlayed with white substance, imports characteristic of the classic phase of the Žuto Brdo-Gârla Mare culture⁵⁹ (Pl. VII/11-16). A clay drinking horn (*rython* or *trinkhorn*), which has good analogies in the area of the inlayed ceramics from Transdanubia⁶⁰, appeared in the filling of the feature C.41 (also a food storage pit), from the pit dug for the sustaining post of the factory G.15.

Extremely interesting is also a ceramic fragment discovered on the left bank of the Timiș, at the northern boundary of the locality of Dragșina (Timiș County, Pl. X/12)⁶¹. The ceramic fragment belonged to the superior part of a black-greyish vessel (amphora ?) of relatively reduced dimensions. The inferior part of the neck was decorated with double incised lines, disposed as arches, similar to those from the vessels characteristic of the Vatina and Cruceni-Belegiš cultures, that ended on the distinctly profiled shoulder of the vessel. On the superior third part, there is schematically presented a human being that seems to be in a boat. The boat has the prow raised and the peak is twisted outward (Pl. VII/1-2). The human silhouette was represented through two concentric circles that suggest the head, the superior and inferior limbs being represented through two parallel lines oriented obliquely to down. The two concentric perfectly round circles, that make the head of the human silhouette, were executed with the help of a stamp as that one discovered at Cârna-Rampă⁶² and at Dubravica-Orașje⁶³. The concentric circles that represent in a schematized manner the head are a motif often met in the ornament repertory of the Szeremle group, as well as in that one of the Žuto Brdo-Gârla Mare culture. It is difficult to mention if these represent an influence of Szeremle-Bijelo Brdo type, group that directly participated at the genesis of the Cruceni-Belegiš culture, or one of Žuto Brdo-Gârla Mare type, which was a culture with which the Cruceni-Belegiš communities had been partly contemporary⁶⁴.

In the neighbourhood of Gătaia (Timiș County, Pl. X/18) there was discovered a bowl inlayed with white substance belonging to the Žuto Brdo-Gârla Mare culture, which, later, reached the collections of the museum from Szeged (Pl. VII/3). The location relatively far-off by the region of the Middle Danube where the communities of Žuto Brdo-Gârla

Mare type developed for a short time suggests the presence of an import in the area of the Cruceni-Belegiș culture⁶⁵.

In the south-eastern corner of Banat, in the cremation necropolis from Liubcova-Țiglărie (Caraș-Severin County, Pl. X/24)⁶⁶, the graves included by C. Săcărin in the phase III of the internal periodization of the necropolis⁶⁷, according to M. Șandor-Chicideanu, have no connection to the developed phase of the Žuto Brdo-Gârla Mare culture and nor to the typical graves of the Bistreț-Ișalnița group. They were rather characteristic of the first phase of the Cruceni-Belegiș culture. This matter is suggested by the amphoras of A1 type from the graves no. 32, 39, 58 and 59, which are found also in the cremation graves from Beograd-Karaburma, Ilandža-Stojkova Zagrada and Orešac (necropolis II) belonging to the Cruceni-Belegiș culture, even if they have analogies in the necropoles of the Žuto Brdo-Gârla Mare culture. The undecorated amphoras from graves no. 34 and 69 from Liubcova-Țiglărie, endowed with prominences at the base of the neck, have analogies in the funerary inventory from graves no.12 and 14 from Ilandža-Stojkova Zagrada, in graves no. 68, 173, 269, 273 from Beograd-Karaburma and in that one of the graves no.8 and 10 from necropolis III from Orešac. Two bowls of S.23 type discovered at Liubcova-Țiglărie have analogies both in the necropolis from Cruceni, in the funerary inventory of the graves no. 93, 94 and 97, as well as in that of the graves discovered at Dubovac-Kudelište. A cup from a funerary unnumbered complex looks through its shape like those typical of the Cruceni-Belegiș culture⁶⁸. According to M. Șandor-Chicideanu, the relatively large number of discoveries of bronze objects within the funerary inventory determine us to think over the graves within the area of the Cruceni-Belegiș culture, which, often in the phase I, contain metallic inventory⁶⁹.

Archaeological materials that can be included in the Žuto Brdo-Gârla Mare culture come from the boundaries of the localities of Vatin and Vrșac. In the cremation necropolis from Vatin-Bele Vode (Pl. X/44), in a grave discovered in 1893⁷⁰, beside the amphora and the small cup typical of the phase I of the Cruceni-Belegiș culture, there was discovered a bowl inlaid with white substance belonging to the Žuto Brdo-Gârla Mare culture⁷¹ (Pl.IX/2). The amphora's shape, typical of the Cruceni-Belegiș culture, but with strong influences of type *Hügelgräberkultur*, is decorated with parallel rows of short vertical incisions, as well as incisions in arches characteristic

of the inlayed ceramics. B.Milleker mentions a decoration inlayed with white substance⁷² (Pl.IX/3).

In the northern part of the locality of Vatin, in the site *Selo* (Pl. X/45), there were found „villanovien” urns, assigned to the beginning of the Iron Age as B.Milleker considers. A few of those urns were decorated with vertical flutes. In this necropolis there is mentioned the discovery of an antropomorph statue of „Brettidol” type⁷³ in an urn.

The archaeological materials that could be assigned to the Žuto Brdo-Gârla Mare culture (*kantharoi* of type K.3, bowls, pyxidia and small cups) were discovered in the boundaries of the locality of Vršac, some of them in less clear archaeological contexts⁷⁴. The archaeological investigations from Vršac-At (Pl. X/47), executed in 1975, uncovered ten cremation graves assigned either to Szeremle group, or to the Žuto Brdo-Gârla Mare culture, while two graves are assigned to the phase I of the Cruceni-Belegiš culture. A cup with superelevated handle decorated with oblique flutes on the maximum diameter, belonging to the phase II of the Cruceni-Belegiš culture⁷⁵ appeared in this place, too. The presence of the materials characteristic of the phase I of the Cruceni-Belegiš culture indicates the presence of some imports in the Žuto-Brdo-Gârla Mare area, and, later, the penetration of some Cruceni-Belegiš communities in the phase II of evolution of this culture.

The same thing is suggested by the findings from Dubovac-Kudelište (Pl. X/13). From the types of vessels discovered in this place, there can be mentioned the globular urns with trumpet-shaped mouth and fluted biconical urns, decorated and undecorated bowls with in- or outward rim, cups with superelevated handle, small vessels of type *kantharos*, amphora supports etc. The decoration consists in motifs inlayed with white substance, incisions, pseudo-cord and flute. The ceramics inlayed with white substance discovered at Dubovac-Kudelište has good analogies both in the ceramics of the Szeremle group, and in the classic phase of the Žuto Brdo-Gârla Mare culture (classic variant)⁷⁶. The presence of the pseudo-corded and fluted vessels indicates the subsequent presence of both phases of the Cruceni-Belegiš culture in the region.

The occupation of the Žuto Brdo-Gârla Mare area by the Cruceni-Belegiš communities is suggested also by the archaeological discoveries from Orešac, where three cremation necropoles were discovered: one belongs to the Szeremele-Bijelo Brdo group, the other to the Cruceni-

Belegiš culture, the latter being considered to be a Hallstatt one⁷⁷. The urn from the grave no. 3 within the necropolis from Orešac-*Proletarska ulica* (necropolis I) (Pl. X/30), assigned to the group Szeremele-Bijelo Brdo, is decorated with the pseudo-corded technique (*Litzen*) and belongs to the phase I of the Cruceni-Belegiš culture⁷⁸.

In the boundaries of the locality of Ilandža, in the site *Stojkova Zagrada* (Pl. X/21), as a consequence of the archaeological investigations from 1949, there were discovered 18 cremation graves belonging to the both phases of the Cruceni-Belegiš culture and two inhumation graves from the Iron Age⁷⁹. In the grave no. 2, the urn belonging to the phase I of the Cruceni-Belegiš culture had as a lid a bowl belonging to the Žuto Brdo-Gârla Mare culture (Pl. VII/4). The vessels assigned to this culture are mentioned also in the grave no. 4 within this necropolis⁸⁰. The urn of the grave no. 1 is decorated with vertical and in garland flutes, but printed concentric circles – ornament specific to the inlayed ceramics – are present above the handles⁸¹.

In the south-western corner of Banat, at Perlez-Batka „S” (Pl. X/34), the archaeological investigations discovered a settlement and a necropolis assigned to the phase II of the Cruceni-Belegiš culture. Within the settlement, two urns associated with two vessel supports similar to those discovered at Dubovac were discovered⁸².

The presence of the inlayed ceramics in the necropoles of the Cruceni-Belegiš culture was found also in Srem. At Belegiš-*Stojica gumno* (Pl. X/5)⁸³, in the inventory of the grave no. 78, there was discovered a cup, which belongs to the group⁸⁴ (Pl. VIII/4) through its shape and decoration. This import suggests that, at the beginning of the evolution of the Cruceni-Belegiš culture (phase Cruceni-Belegiš I), the communities of the group Szeremele-Bijelo Brdo were still evolving. The influence of the inlayed ceramics is emphasized also by the urn of the grave no. 58, a biconical amphora with high cylindrical neck and outward rim, ornamented with bands of circular incised lines on the neck and arches on the superior third part of the vessel (Pl. VIII/5). The decoration is completed by a row of printed concentric circles disposed on the vessel shoulder, close to the neck's base⁸⁵.

In the cremation plane necropolis from Beograd-Karaburma (Pl. X/6), in the graves no. 61, 157 and 277 there were discovered ceramic artefacts characteristic of the Žuto Brdo-Gârla Mare culture. The urn of the grave no.

61, a biconical amphora with trumpet-shaped neck and outward rim was decorated with vertical incised lines on the maximum diameter of the vessel and with printed circles of different dimensions on the shoulder and on the neck. The flat rim also decorated with incised lines and printed concentric circles, characteristic both of Szeremle cultural group, and of the Žuto Brdo-Gârla Mare culture (Pl.VIII/1). The grave is dated by J. Todorovič in the first functioning phase of the necropolis, respectively at the horizon of Bz. B₁ period in P. Reinecke's modified system⁸⁶. The urn of the grave no. 277 (Pl. VIII/2), a globular amphora with a partly maintained cylindrical neck, was decorated with circular, curved and zigzag incised lines, hachured rhombs as well as with concentric hachured circles⁸⁷. The grave no. 157 was dated in the first phase of the evolution of this necropolis on the basis of a miniature clay sample of house, whose decoration consists in incised lines and printed concentric circles inlaid with white substance. It was assigned to the Žuto Brdo-Gârla Mare culture⁸⁸ (Pl. VII/5-7). The object is unique for this period anticipating the funerary practices characteristic of the Villanova culture⁸⁹. According to M. Șandor-Chicideanu, the amphoras used as urns in the three graves, especially that from the grave no. 61, are similar with those of type A.2 from the western area of the Žuto Brdo-Gârla Mare culture⁹⁰. In her opinion, the vessels of *kantharos* type from the graves no. 265⁹¹, 266⁹², 287⁹³, 297⁹⁴, 305⁹⁵ are comparable as shape to the vessels of K3 type from the shape repertory of Žuto Brdo-Gârla Mare, but with a less elaborate decoration⁹⁶.

Also in Srem, at Erdevik-Lice (Pl. X/15), the archaeological investigations uncovered a prehistoric settlement with more cultural layers. In the layer belonging to the Bronze Age, there were discovered typical ceramic materials inlaid with white substance, mixed with ceramic materials belonging to the Vatina culture and to the first phase of the Cruceni-Belegiš culture⁹⁷.

The imports of Szeremle-Bijelo Brdo type in the area of the Cruceni-Belegiš culture (Belegiš-*Stojica gumno*), as well as those of Cruceni-Belegiš type in the Szeremle-Bijelo Brdo group from *Odžaci-Filipovačke livade* (Pl. X/28), *Orešac-Proletarska ulica* (Pl. X/30), *Mošorin-Stubarlija Surduk/Dukatar Surduk* plead for a short co-existence in time of the two ethnical-cultural manifestations.

The findings of Cruceni-Belegiš type from Bačka emphasize the fact that this culture, even since the first phase of its evolution, penetrates west

to the Tisza and occupies the area of the inlayed ceramics communities of Szeremle-Bijelo Brdo type. In the boundaries of the locality of Odžaci, in the site *Filipovačke livade*, the surveys and the sound trenches from 1965 revealed the existence of a cultural layer with ceramic materials belonging to the Bjelo Brdo-Szeremle cultural group. Among these materials, we can mention a *kantharos* assigned to the first phase of the Cruceni-Belegiš culture⁹⁸. The archaeological investigations from the boundary of the locality of Kać, in the sites *Popov Salaš* (site no.1) and *Čot I* (site no. 2) revealed the effective presence of the Cruceni-Belegiš communities south to Bačka, still since the phase I of the evolution of this culture. In the site *Popov Salaš* (site no. 1), the archaeological investigations between 1960-1965 showed the existence of a prehistoric site with a succession of dwellings from different periods of time. In the level belonging to the Bronze Age, beside the materials belonging to the Vatina culture, there were also discovered ceramic materials typical of the complex of the inlayed ceramics (phase I) and of the Otomani culture. The latest levels belong to the Cruceni-Belegiš culture, phases I-II⁹⁹. The rescue excavations in the site *Čot I* (site no. 2) uncovered a settlement with several cultural layers, belonging to the Baden, Kostolac, „Dubovac“, Belegiš I and so-called „Belegiš-Gava“ cultures. The stratigraphy of this site is both vertical and horizontal¹⁰⁰. We have to mention also the discoveries from the sites *Livade*¹⁰¹, *Popov Salaš* (site no. 2)¹⁰² and *Čot I* (site I)¹⁰³, where ceramic fragments characteristic of the first two phases of the evolution of the Cruceni-Belegiš culture appear. Ceramic materials assigned to the phase II of the Cruceni-Belegiš culture are noted in the sites *Čot II*¹⁰⁴ and *Vinogradi*¹⁰⁵.

At Mošorin-Stubarlija *Surduk/Dukatar Surduk* (Pl. X/26), the archaeological investigations uncovered 35 cremation graves and 6 inhumation graves. Five of the cremation graves contained inlayed ceramics of Szeremle-Bijelo Brdo type, the others being typical of the Cruceni-Belegiš culture, phases I-II. The graves no. 17 and 27 contained, beside vessels typical of the phase I of the Cruceni-Belegiš culture, vessels of type Szeremle-Bijelo Brdo¹⁰⁶ (Pl. VIII/6). The surveys and the sound trenches made at the sites *Siget* (Pl. X/25)¹⁰⁷ and *Vinograd* (Pl. X/27)¹⁰⁸, from the boundaries of the locality of Mošorin, proved the existence of the ceramic materials characteristic of the phase II of the Cruceni-Belegiš culture, beside the ceramic materials assigned to the complex of the inlayed ceramics. This fact demonstrates the control exerted over this territory by

the Cruceni-Belegiš communities, even since the first phase of their evolution.

As a result of the surveys executed in the boundaries of the localities of Đurđevo-*Velike njive* (Pl. X/14) and of Šajkaš-*Inački breg* (Pl. X/38), there were discovered both inlaid ceramic fragments and pottery typical of the phase I of the Cruceni-Belegiš culture. Similar discoveries were made also in the boundaries of the locality of Titel, respectively on the bank of the Tisza, in the settlement no. 4 (Pl. X/39)¹⁰⁹, as well as in the site *Demljankov Surduk* (Pl. X/40)¹¹⁰. Also in the boundary of the locality of Titel, in the site *Kalvarija* (Pl. X/42), there was found an entire vessel of *kantharos* type, initially considered a grave characteristic of the inlaid pottery¹¹¹. According to M. Șandor-Chicideanu, the vessel can be assigned rather to the group Szeremle or to the phase I of the Cruceni-Belegiš culture¹¹². The archaeological investigations seem to answer the question whether these discoveries are proofs of the cultural contacts already emphasized in other archaeological sites from Bačka or they prove a gradual penetration of the Cruceni-Belegiš communities.

The control of the Cruceni-Belegiš communities over Bačka in the phase II of the evolution of this culture is suggested by the archaeological discoveries within the boundaries of the localities Titel (in the sites *Donje Titelskog polje* (Pl. X/41)¹¹³ and *Rogulicev Surduk* (Pl. X/43)¹¹⁴), Čurug - *Slatina*, sites no. 3 (Pl. X/8)¹¹⁵ and 4 (Pl. X/9)¹¹⁶ and Šajkaš-*Salašina* (Pl. X/37)¹¹⁷.

In the Eastern Slavonia, the archaeological investigations from Dalj-*Livadice* (Pl. X/10) uncovered a prehistoric site with a cultural layer of 1.5 m in depth, where more settlements belonging to the Bronze Age are found. The stratigraphy of 1.5 m in depth was unclear. In the first level there were discovered, beside materials of type „Late Vatina”/„Vatina-Belegiš” (Cruceni-Belegiš I), inlaid ceramic fragments of Bijelo Brdo-Dalj type. There were also found four antropomorph idols in this level. In the second level, there were discovered fluted pottery belonging to the phase II of the Cruceni-Belegiš culture¹¹⁸, among them being noticed materials somehow like those belonging to the Bistreț-Ișalnița culture¹¹⁹.

Ceramic fragments belonging to the „Vatin-Belegiš phase” (Cruceni-Belegiš I) of a spinning wheel, as well as a fragment of a bowl with ornaments characteristic of the south-Pannonian inlaid ceramics were

discovered as a result of archaeological investigations in the boundary of the locality of Oriolik, in the site *Vinogradi* (Pl. X/32).

Close to the river mouth of the Drava in the Danube, in the boundaries of the locality of Aljmaš, in the *Podunavlje* site (Pl. X/1), the fortuitous discoveries and the sound trenches proved the existence of a prehistoric settlement with materials assigned to Bijelo Brdo – Dalj group and „to Vatina - Belegiš group”¹²⁰.

The surveys from *Erdut-Veliki Varod*, in the steep bank of the Danube (Pl. X/16), permitted the identification of a settlement with cultural levels from several historical periods. The inlayed pottery of Bijelo Brdo-Dalj type and Cruceni-Belegiš, phase II¹²¹ belonged to the Bronze Age.

The extension to the eastern part of Banat of the Cruceni-Belegiš culture is pointed out also by the new discoveries within the boundaries of the locality of Iam (Caraș-Severin County), in the site *Sat Bătrân* (Pl. X/20). Beside archaeological materials characteristic of the Žuto Brdo-Gârla Mare culture there was also discovered an urn with conical leg, decorated with vertical flutes on the belly and circular flutes on the leg. Adriana Radu considers that the grave is characteristic of the phase II of the Cruceni-Belegiš culture. Thus, the necropolis from Iam-*Sat Bătrân* and that one from Vrani are the most southern discoveries of Cruceni-Belegiš in Romanian Banat¹²².

At *Svinița-Piatra Elișovei* (Caraș-Severin County, Pl. X/36) there is mentioned the discovery, beside ceramic fragments characteristic of the phase II of the Žuto Brdo-Gârla Mare culture, of an urn decorated with circular flutes on the neck and oblique flutes on the belly which are flanked with four conical prominences (Pl. VIII/3). This urn is dated in Bz.D – first half of the Ha.A₁ phase¹²³. The resemblance with certain amphoras discovered in the necropoles of Cruceni-Belegiš (Cruceni, Dubovac) could plead for the hypothesis of a late import or even of some Cruceni-Belegiš graves, phase II¹²⁴, in the western area of the Žuto Brdo-Gârla Mare culture.

The penetration of some Cruceni-Belegiš communities in the western area of the Žuto Brdo-Gârla Mare culture can be observed even since the first phase of the culture (for example *Liubcova-Țiglărie*, phase III of the necropolis, in C. Săcărin's periodization). This penetration is better documented with materials characteristic of the phase II of the Cruceni-Belegiš culture (for example Dubovac, Vršac, Iam, Svinița). Thus, this hypothesis of the existence of a collision region between the Cruceni-

Belegiš and Žuto Brdo-Gârla Mare cultures in the southern region of Yugoslav Banat seems to be a historic reality. As plausible as this seems to be also the gradual awarding of this territory by the Cruceni-Belegiš communities in phase II of this culture's evolution¹²⁵.

The rich repertory of ceramic shapes of the Žuto Brdo-Gârla Mare culture contributes to the understanding of the general view of the cultural and commercial contacts existent between the two cultural manifestations. Thus, the amphoras of A1 type, even if they are more spread in the eastern area of the Žuto Brdo-Gârla Mare culture, in the western area, the similar shapes can not be certainly assigned to this because they are characteristic of the phase I of the Cruceni-Belegiš culture, where this type seems to have a less developed shoulder¹²⁶. M. Șandor-Chicideanu considers that it is possible that the amphoras from Dubovac, Liubcova, Moșorin come from features which could belong to Cruceni-Belegiš culture¹²⁷. The amphoras of A14 type are not characteristic of the Žuto Brdo-Gârla Mare culture. Those discovered at Dubovac are similar to those from the area of the Cruceni-Belegiš culture, to which this type has to belong to¹²⁸. The bowls of S23 type, discovered at Dubovac-Kudelište and Liubcova-Țiglărie, are typical of the Cruceni-Belegiš culture and they prove the infiltration of the communities of this culture in the area of the Žuto Brdo-Gârla Mare communities. The presence of a bowl of S23 type in a grave, certainly belonging to the Žuto Brdo-Gârla Mare culture, discovered in the necropolis from Plosca-Cabana de metal (Dolj County, Pl. X/35), seems to be the most eastern Cruceni-Belegiš import within the Žuto Brdo-Gârla Mare area¹²⁹. The bowl S21 and S22 types, present in the necropoles from Dubovac-Kudelište and Mala Vrbica-Livade¹³⁰ are also assigned to the Cruceni-Belegiš culture. The vessels of *kantharoi* K2 and K3 types seem to have developed from the baroque shapes with rhomb mouth of the Vatina culture. They became common shapes for more cultural areas: Szeremle-Bijelo Brdo, Žuto Brdo-Gârla Mare and Cruceni-Belegiš¹³¹. The *Kantharos* K2 type (for example Belegiš-Stojica *gumno* – 2 pieces.; Beograd-Karaburma – 1 piece; Sarvaš-Gradac – 1 piece) is met both in the typology of the Cruceni-Belegiš ceramics (phase I), and in those of the inlaid ceramics of Szeremle-Bijelo Brdo and Žuto Brdo-Gârla Mare types. Beyond the fact that it proves a certain chronological synchronism between the Cruceni-Belegiš culture and the Szeremle-Bijelo Brdo group, the K2 type emphasizes also a parallel evolution with the Žuto Brdo-Gârla Mare culture, with which it is related,

too. The *Kantharos* of K.3 type (for example *Belegiš-Stojica gumno* – 1 piece; *Beograd-Karaburma* – 4 pieces; *Vršac-Ludoš* – 1 piece; *Surčin* – 1 piece) is less present within the area of the Szeremle-Bijelo Brdo group, upstream the confluence of the Danube with the Tisza but it frequently appears in the Žuto Brdo-Gârla Mare culture both at west and at east of the Iron Gates, as well as in the sites of the Cruceni-Belegiš culture (phase I)¹³².

The cultural and commercial contacts between the Cruceni-Belegiš and Žuto Brdo-Gârla Mare cultures could be suggested also by the discoveries of bronze objects. The distribution of the cordformed pendants in the area of the Žuto Brdo-Gârla Mare communities is possibly to have been mediated by the Cruceni-Belegiš populations. In the area of the Cruceni-Belegiš culture, this category of jewelry was extremely used during the phase I while they were abandoned during the phase II. This hypothesis can be sustained by the discoveries from the Cruceni-Belegiš necropolises from Cruceni, *Beograd-Karaburma*, *Belegiš-Stojica gumno*¹³³.

The influences exerted by the Cruceni-Belegiš communities in the area of the Žuto Brdo-Gârla Mare culture, the final phase, determined the appearance of Bistreț-Ișalnița cultural group. That was a distinct cultural group that developed in parallel with the phase II of the Cruceni-Belegiš¹³⁴ culture. This matter is proved by the bowls discovered at *Dalj-Livadice* and *Hrtkovci-Gomolava* (level IVc), similar to identity with those of S34 and S35 types from the repertory of shapes characteristic of the cultural group Bistreț-Ișalnița¹³⁵.

Extremely interesting is the association of the imports of Žuto Brdo-Gârla Mare type with the vessels decorated in the „pseudo-corded” technique (*Litzen* type), that are characteristic of the phase I of the Cruceni-Belegiš culture. This association permits a good chronological synchronization of the classic phase of the Žuto Brdo-Gârla Mare culture with the beginning of the Cruceni-Belegiš culture. If the imports of Žuto Brdo-Gârla Mare type in the Cruceni-Belegiš area are relatively numerous, those of Cruceni-Belegiš type, decorated with pseudo-corded (*Litzen*) are extremely rare (*Dubovac-Kudelište*, *Orešac-Proletarska ulica*, necropolis I). The lack of the vessels with pseudo-corded ornaments in the Žuto Brdo-Gârla Mare area, but the large number of inlaid vessels belonging to this culture in the area controlled by the Cruceni-Belegiš culture can be explained through the interest of the Cruceni-Belegiš communities for the area controlled by the Žuto Brdo-Gârla Mare communities. The Danube

constituted one of the major commercial thoroughfares of the prehistory. The parallel short evolution of the phase I of the Cruceni Belegiš culture with the classic phase of the Žuto Brdo-Gârla Mare culture can be added to this explanation. Within this short parallel evolution, the pseudo-corded technique (*Litzen*) was abandoned. The next archaeological investigations, corroborated with new ¹⁴C data, will confirm or refute these hypotheses.

Conclusions

On the basis of the archaeological discoveries both from the area of the inlayed ceramics communities of Szeremle-Bijelo Brdo and Žuto Brdo-Gârla Mare types, and from the area of the Cruceni-Belegiš culture, we can formulate a few conclusions concerning the relationship between the two ethnical-cultural manifestations:

1. The appearance of the Cruceni-Belegiš culture coincides with the phase II (classical phase) of the Žuto Brdo-Gârla Mare culture. During the phase I, the Cruceni-Belegiš communities (concentrated on the Danube's course, from the river mouth of the Drava close to the western part of the Carpathians, south to Bačka and in Banat) evolve for a short period of time in parallel with the late Szeremle-Bijelo Brdo communities.

2. Even if it comes out a contribution of the inlayed ceramics of type Szeremle-Bijelo Brdo in the formation of the Cruceni-Belegiš culture, this does not dim the massive genetic background of the Vatin culture. This background is proved by the perpetuation of some ceramic ornaments and of some vessels shapes as for example the *kantharos*.

3. From a typological point of view, there are common ceramic shapes (*kantharos* of k2 and k3 types and the amphora of A1 type) in the area of Cruceni-Belegiš și Žuto Brdo-Gârla Mare cultures. These shapes, especially the *kantharos*, plead for a certain contemporary existence of the two cultures.

4. The archaeological discoveries from the south-eastern region of Banat

(Dubovac-Kudelište, Vatin-Bele Vode, Vršac-At și Vršac-Ludoș (Pl. X/48), Liubcova-Țiglărie), where it is noted a massive mixture of materials characteristic of the two cultures, suggest the existence, in the phase I of the Cruceni-Belegiš culture, of a collision region¹³⁶. This region will be occupied later by the communities of this culture (during the phase II of

Cruceni-Belegiš culture). Their presence in the regions occupied before by the Žuto Brdo-Gârla Mare culture is demonstrated by the necropolises of Cruceni-Belegiš culture (phase II) discovered at Banatska Palanka-Rudine (Pl. X/2)¹³⁷, Iam-Sat Bătrân, Liubcova-Țiglarie, and maybe at Svinița-Piatra Elișovei, as well as by the fluted ceramic fragments with which the bronze hoards discovered at Kličevac-Rastovača¹³⁸ and Kličevac-Katanski brod¹³⁹ are associated.

5. The repertory of the discoveries of Žuto Brdo-Gârla Mare type from Banat (Pl. X) (imports in the area controlled by Cruceni-Belegiš culture) emphasizes the fact that the most northern discoveries are those from Cruceni, Foeni, Peciu Nou, Voiteni and Deta. This matter points out the interest of the Cruceni-Belegiš communities for the civilization of the Žuto Brdo-Gârla Mare culture.

6. The cultural contacts between the Cruceni-Belegiš and Žuto Brdo-Gârla Mare cultures are emphasized also by the appearance of the Bistreț-Ișalnița group, formed on Žuto Brdo-Gârla Mare background on which the Cruceni-Belegiš influences were grafted. The chronological parallelism between the two ethnical-cultural manifestations is demonstrated by the ceramic materials similar to those of Bistreț-Ișalnița type, discovered in the Cruceni-Belegiš area, at Hrtkovci-Gomolava and Dalj-Livadice.

The next archaeological investigations will certainly bring new information concerning the cultural contacts between the two ethnical-cultural related manifestations.

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NOTES

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2. Kovács T., 1977, 17.
3. Tasić, N., 1974, 462-463; Tasić, N., 1988, 48-53, abb. 2; Medović, M., 1996a, 165, map 1; Kiss, V., 1998, 165-167; Șandor-Chicideanu M., 2003, vol. I, 15, 208.
4. Bóna I., 1975, 225-227.

5. Șandor-Chicideanu M., 2003, vol. I, 15,208.
6. Bándi G., Kovács T., 1970, 38-39, apud Șandor-Chicideanu M., 2003, vol. I, 12; Bándi G., 1984, 273.
7. Șandor-Chicideanu M., 2003, vol. I, 199, 208.
8. Șandor-Chicideanu M., 2003, vol. I, 217; for the discussions concerning the proto-Gârla Mare ceramics discovered in the settlement from Ostrovu Corbului-*Botul Cliuciului*, see pp. 13 and 19.
9. Șandor-Chicideanu M., 2003, vol. I, 217.
10. Șandor-Chicideanu M., 2003, vol. I, 35.
11. Șandor-Chicideanu M., 2003, vol. I, 209.
12. Șandor-Chicideanu, 2003, 209.
13. Radu, O., 1973, 507; S. Morintz has the same opinion too. He considers that both the Cruceni-Belegiš culture and the Dubovac-Žuto Brdo-Gârla Mare culture develop on the background Vatina and they fit "in the large complex of the cultures with printed ceramics" (Morintz, S., 1978, 45).
14. Moszolics, A., 1942, 48; Benkovsky-Pivovarová, Z., 1992, 344, 349, abb. 3.; Gogâltan Fl., 1993, 66; Gogâltan Fl., 1994, 19-20; Gumă, 1997, 57; Gogâltan Fl., 1998, 184; Szentmiklosi Al., 2004 .
15. Moszolics, A., 1942, 48; Tasić, N., 1974, 462-463; Benkovsky-Pivovarová, Z., 1992, 344, 349, abb. 3.; Gogâltan Fl., 1993, 66; Gogâltan Fl., 1994, 19-20; Dizdar M., 1996, 26; Gumă, 1997, 57; Gogâltan Fl., 1998, 184; Kiss, V., 1998, 165-167; Tasić, N., 1988, 48-53, abb. 2; Tasić N., 2001, 313, 314; Tasić N., 2002, 192; Marijan B., 2003, 114-115; Szentmiklosi Al., 2004, 84 .
16. Fischl P., Kiss V., 2002, 131-133; Kiss V., 1998, 163-164, note 21, 172.
17. Medović Pr., 1996, 165, Map 1, no. 30; Medović Pr., 1998, 75-76, no. 85, 119, Pl. 25/1-7; Șandor-Chicideanu M., 2003, vol. I, 236, no. 132.
18. Tasić N., 1996, 147-148; Șandor-Chicideanu M., 2003, vol. I, 195.
19. Personal communication from Florentina Martis. The ceramic material from the settlement of Vatina type follows to be soon published.
20. Gogâltan Fl., 2004, 88-89,142, Pl. VI/3.
21. Tasić, N., 1988, 48-53, abb. 2.
22. Wosinszky M., 1904, 52, no.22, Pl. LXXV/1-9.
23. Andelić D., 1995, 14-15; Šimić J., 1994, 199-200; Šimić J., 1998, 242.
24. Trogmayer, O., 1992, 353-354.
25. Gumă M., 1997, 66.
26. Šimić J., 1998, 242.
27. Gumă, M., 1997, 65-66.
28. Tasić N., 1965, 200-201, where Bz.C-D corresponds to the phase Belegiš I, and period Ha.A-B to the phase Belegiš II; Horedt, K., 1967, 147-149; Radu, O., 1973, 506-507; Tasić, N., 1974, 462-464; Morintz, S., 1978, 40-45; Tasić, N., 1983, 156-157; Trogmayer, O., 1992, 353-354; Tasić, N., 2001, 312-315; Tasić, N., 2002, 193.
29. "Reinecke-Willvonseder-Holste-Torbrüge-Rittershofer Bz. A₂" (Gogâltan Fl., 1999, 15-19, 42-43, with the old bibliography).
30. Jacanović D., 2000, 50-51.
31. Gogâltan Fl., 2000, 43-45.
32. Petrescu-Dîmbovița M., 1977, 39-46, 51-73, 80-119, 121-125.

33. Gumă M., 1993, 261-263.
34. Gumă M., 1993, 181, 190-191.
35. Gumă, M., 1993, 168-179; Gumă, M., 1995, 103-110; Gumă, M., 1997, 61-67, 73-74.
36. Chicideanu, I., 1986, 40-47, Chicideanu, I., 1995, 168, that include the discoveries from Mala Vrbica in the repertory of discoveries typical of Bistreț-Ișalnița group (Chicideanu, I., 1986, 45).
37. Șandor-Chicideanu M., 2003, vol. I, 30-34, 209, 213, with discussions and old bibliography.
38. Chicideanu, I., 1986, 40-47.
39. Șandor-Chicideanu M., 2003, vol. I, 209, 213.
40. Șandor-Chicideanu M., 2003, vol. I, 34, 69.
41. Moga M., 1964, 296; Moga M., 1965, 450; Godea I., 1995, 35, fig. 20-21; Medeleț Fl., 1995, 289-294, 299-300; Horedt K., 1967a, 17-20; Horedt K., 1967b, 147-149; Radu O., 1971, 19-23; Radu O., 1973, 503-520.
42. Archaeological investigations executed by M.Moga in 1958.
43. Șandor-Chicideanu M., 2003, vol. I, 198, vol. II, 196, Pl. 191/1-3.
44. Șandor-Chicideanu M., 2003, vol. I, 198 vol. II, 196, Pl. 191/5-6.
45. Archaeological investigations executed by M.Moga in 1958; Șandor-Chicideanu M., 2003, vol. I, 198, vol. II, 196, Pl. 191/4.
46. Vukmanović M., Popović P., 1996, 89, 99, Pl. V/10; Șandor-Chicideanu M., 2003, vol. I, 198.
47. Gumă M., 1992, 29; Gumă M., 1993, 151, 293, no. 114, Medeleț Fl., 1995, 289-293, 295-301; Chicideanu I., 1995, 186; Gumă M., 1997, 55; Gogâltan Fl., 1998, 205, Pl. X/21; Rogozea P., 1998, 189, Pl. I/40; prof. Fl. Medeleț's premature death ceased the working of the archaeological material from the investigated necropolis. But it will be published in future.
48. El Susi G., 1990, 249-251; Gumă M., 1992, 29; Gumă M., 1993, 15, 298, no. 168; Medeleț Fl., 289, note 6, 290, 292-293, 295, 299-300; Chicideanu I., 1995, 168, Gumă M., 1997, 55; Gogâltan Fl., 1998, 205, Pl. X/30; Rogozea P., 1998, 189, Pl. I/41; Szentmiklosi Al., 1998, 197-207; Luca A.S., 2005, 404, no.657, pct. 1/a.
49. Rescue investigations executed by prof. Fl. Medeleț, now being processing and publishing.
50. Novel investigations executed by prof. Florin Medeleț in 1986.
51. Gogâltan Fl., 2004, 88-89, 142, Pl. VI/3.
52. Archaeological investigations executed in 2000 and 2004 by the author.
53. Probably an arrangement for hydro-isolating with ceramic fragments disposed horizontally as for strengthening the structure.
54. Milleker B., 1897, 34; Milleker B., 1905, 34; Milleker B., 1906, 26-27; Gumă M., 1993; 252, 288; Gumă M., 1997, 55; Gogâltan Fl., 1998, 205, Pl. 10/11; Gogâltan Fl., 1999, 93-94; Luca A.S., 2005, 121, no.197, pct. 2/a.
55. The site is located north to the old park *Kratzer Antal*, today the place where the factory S.C. Eybl Textile S.R.L is located.
56. Szentmiklosi Al., 2005a, 637-656; Szentmiklosi Al., 2005b, 615-616;
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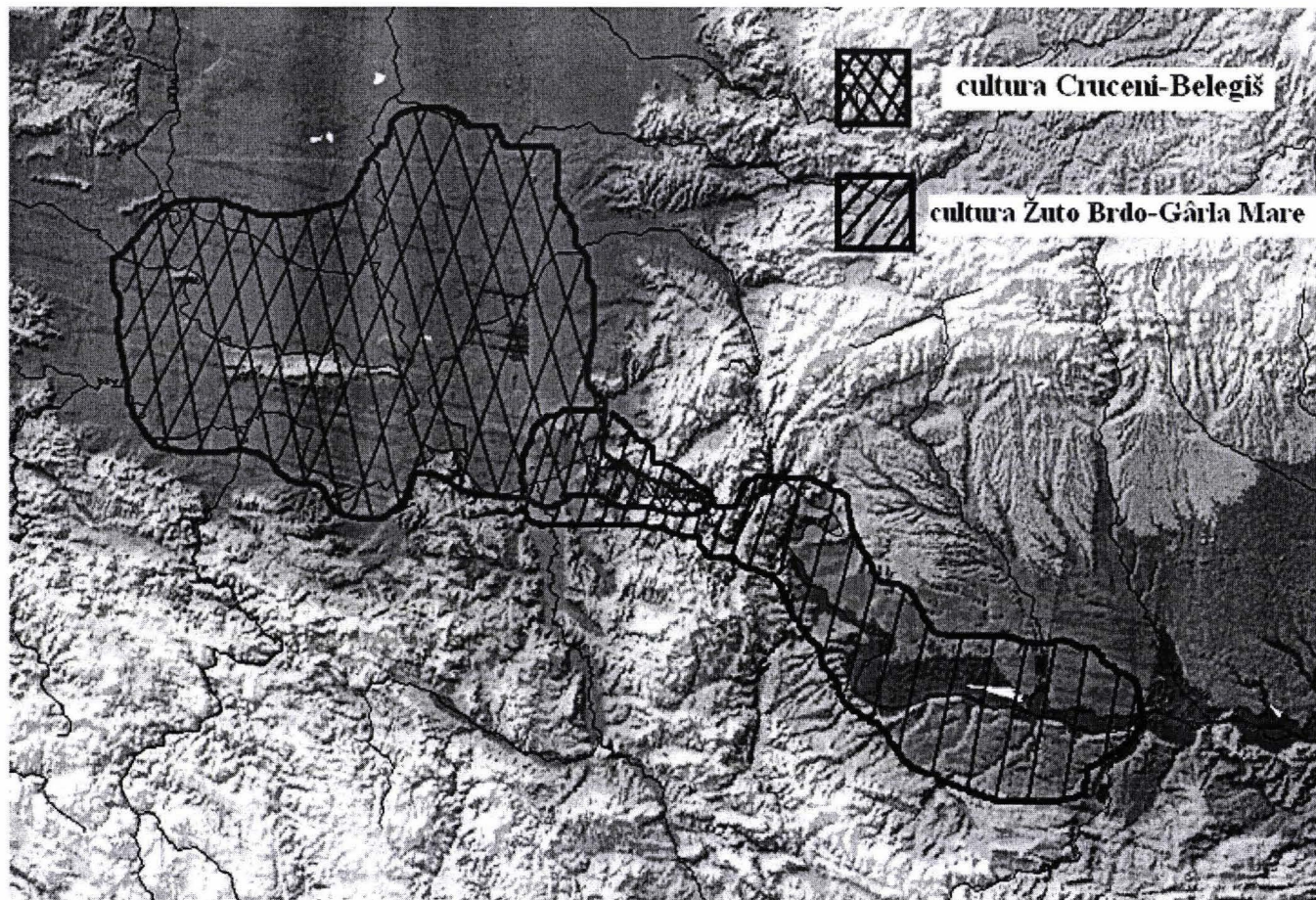
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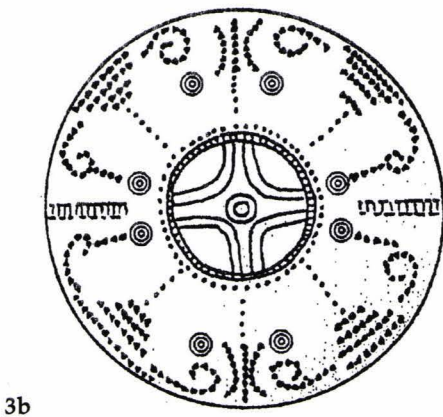
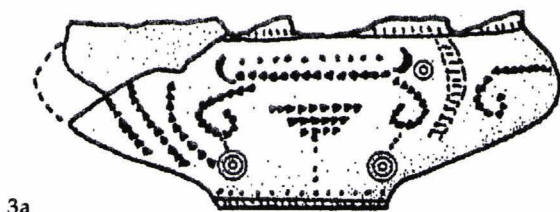
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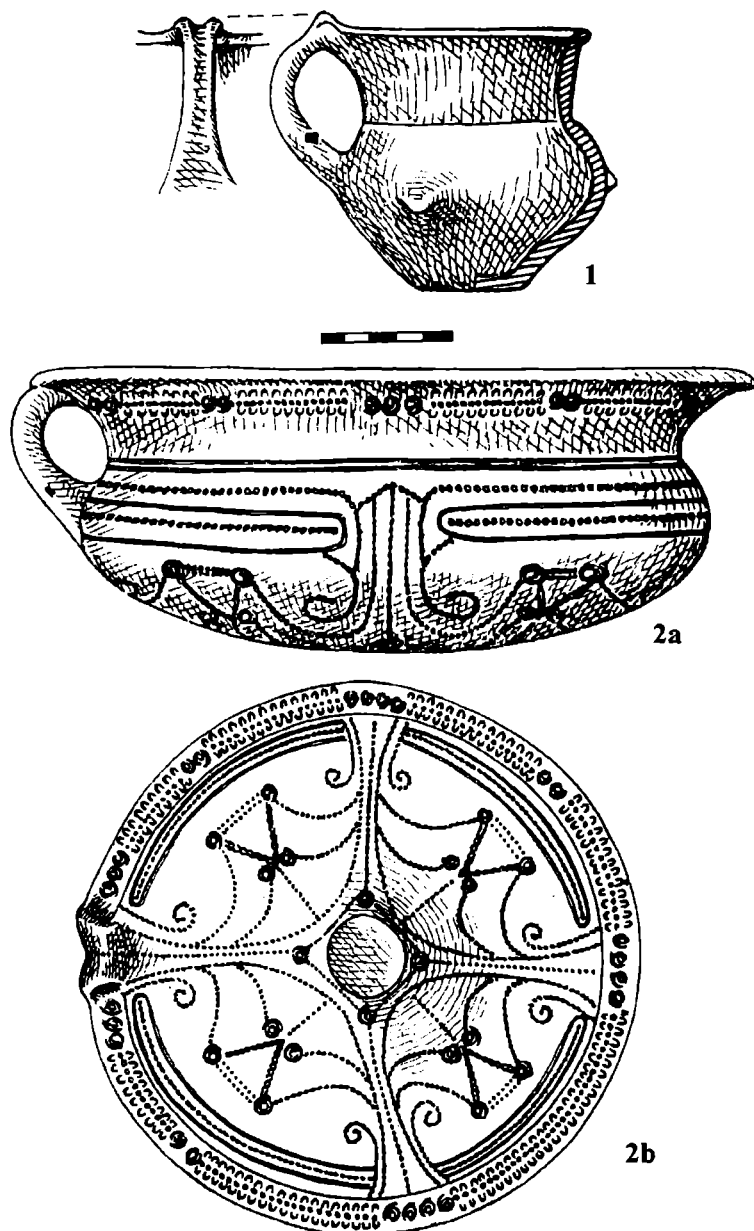
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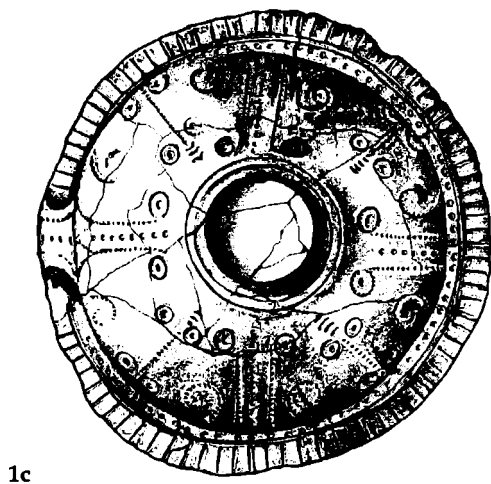
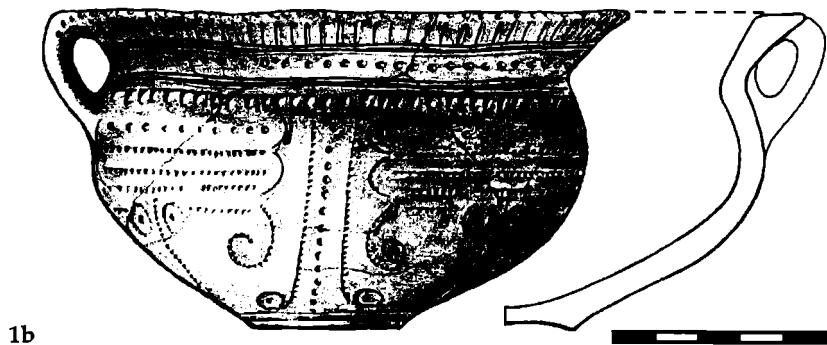
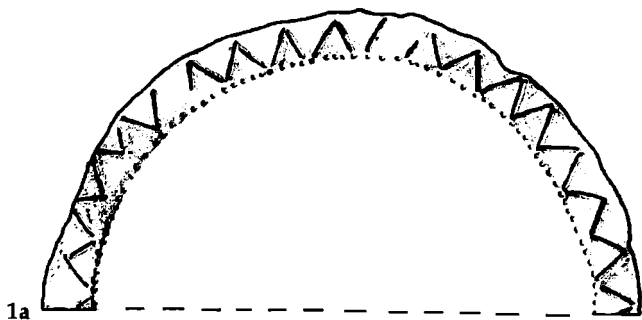
Pl. I : Map of spreading of Cruceni-Belegiš and Žuto Brdo-Gârla Mare cultures



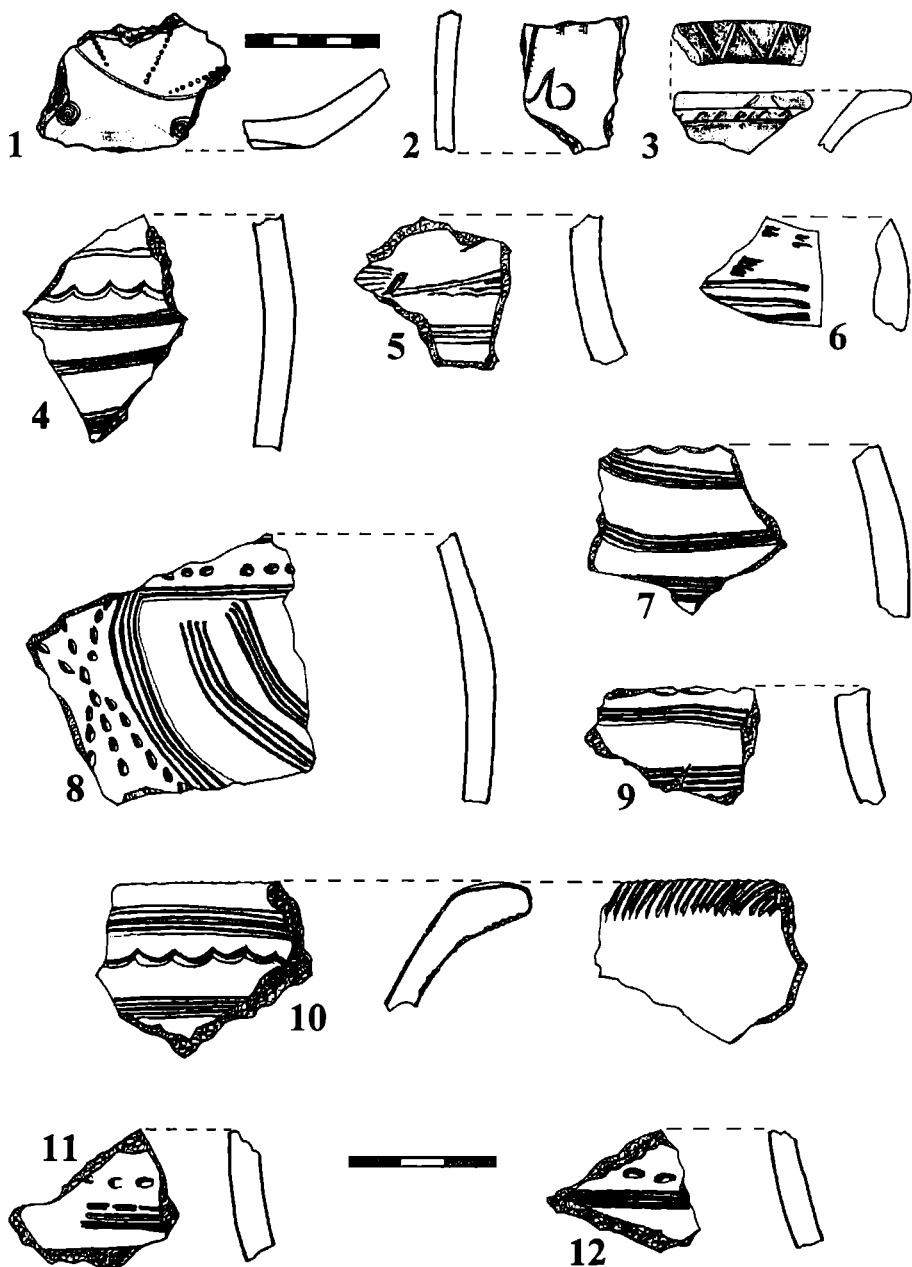
Pl. II: Cruceni, grave no.32 (1), grave no.11 (2-4)



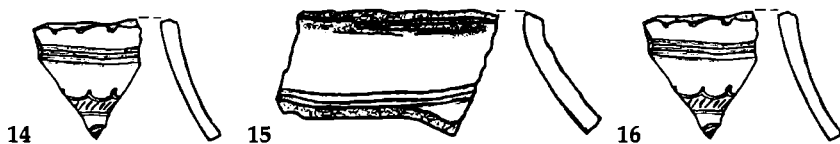
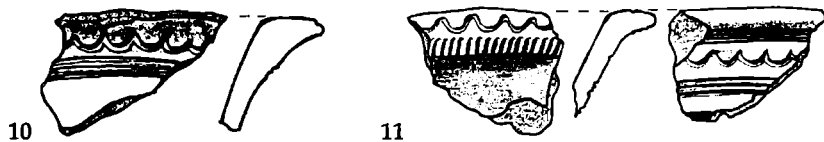
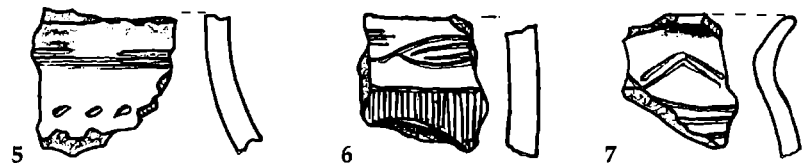
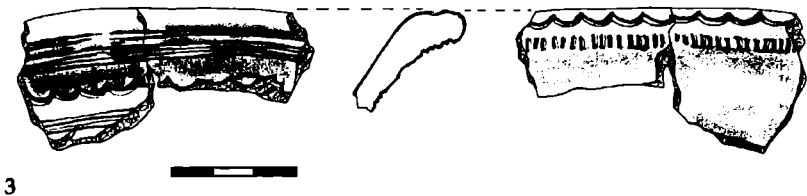
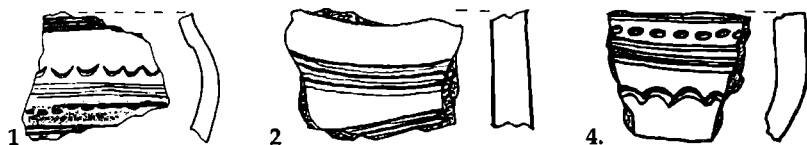
Pl. III : Cruceni – grave no.96 (2-4).



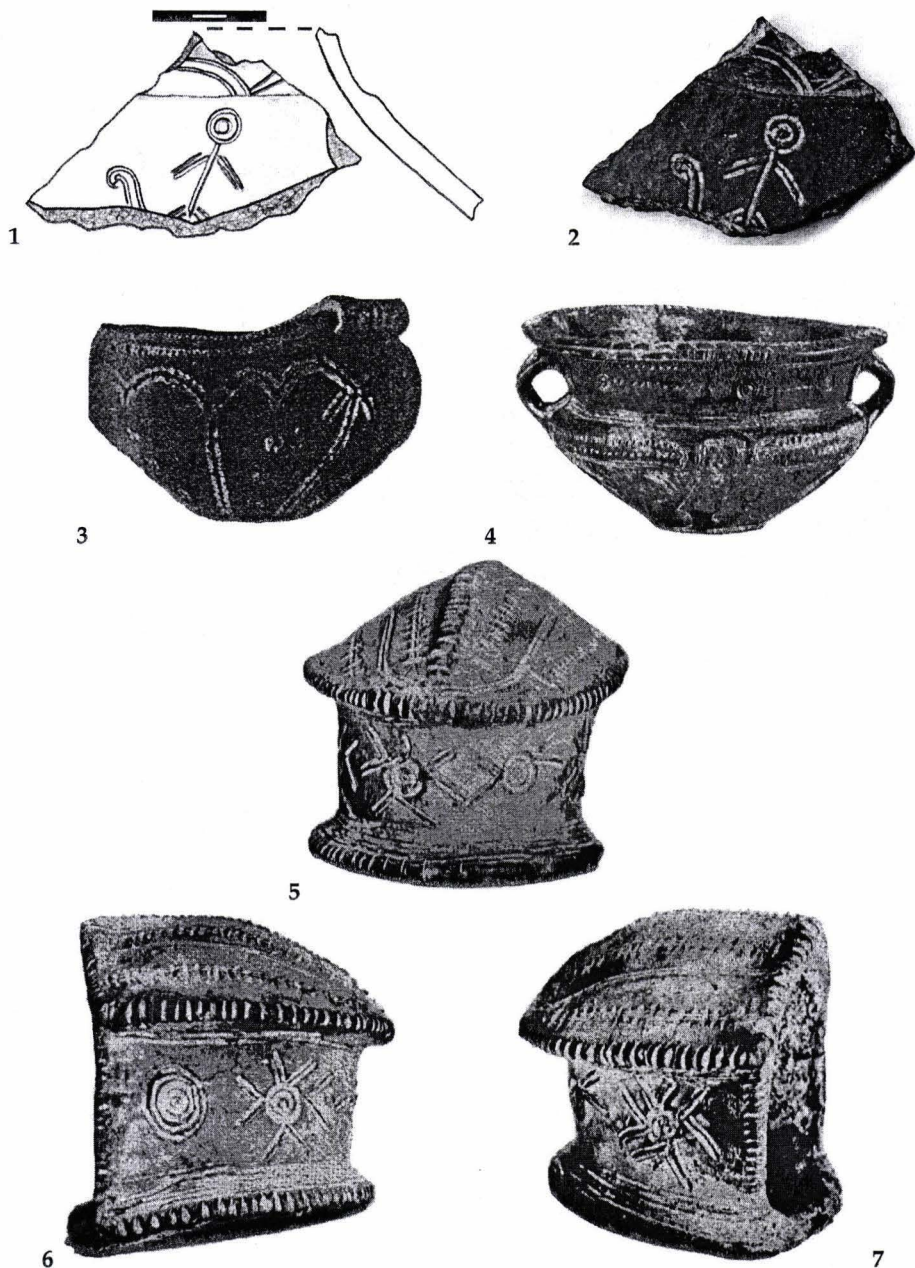
Pl. IV : Peciu Nou: grave no. 48



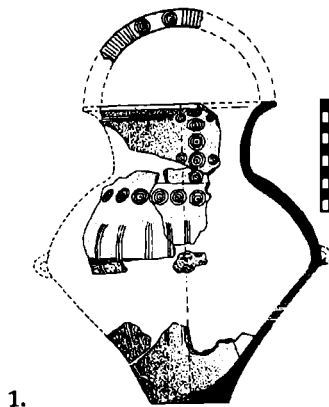
Pl. V : Voiteni-Ciacova: ceramic fragments from the settlement (1-3); Foeni-Gomila Lupului II
– ceramic fragments from the pit-dwelling house no.2/2000 (4 -12).



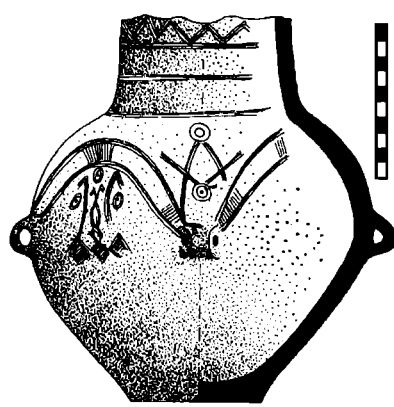
Pl. VI : Foeni-Gomila Lupului II - ceramic fragments discovered in pit-dwelling houses no.2/2000 (1-3) and no.1/2000 (4) ; Deta-Dudărie - ceramic fragments discovered in G.5, C.9 (5-9), G.7, C.13 (10), G.8, C.14 (11-16).



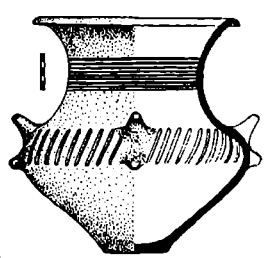
Pl. VII : Dragășina – isolated finding (1-2); Gătaia (3); Ilandža-Stoikova Zagrada, grave no. 2 (4); Beograd-Karaburma, miniature clay house discovered in the grave no.157 (5-7).



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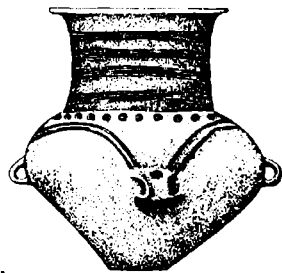
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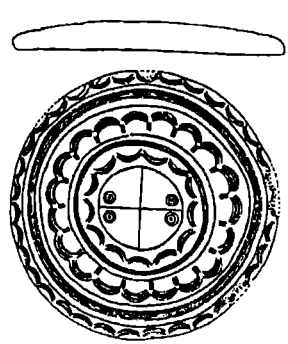
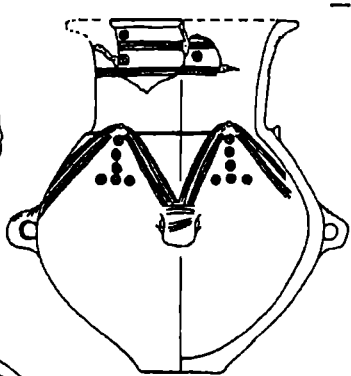
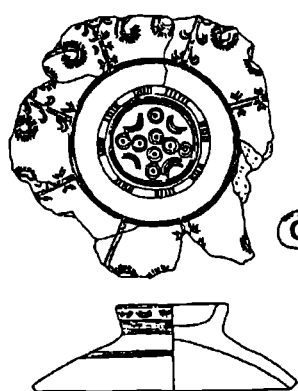
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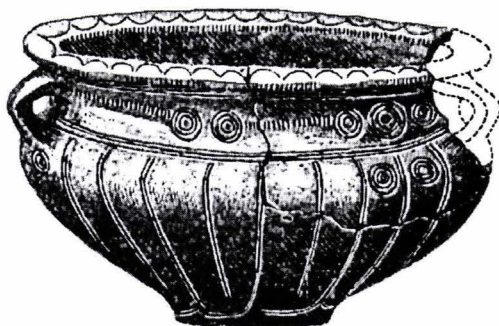


6.

Pl. VIII : Beograd-Karaburma, grave no. 61 (1) and no.277 (2); Svinița-Piatra Elișovei, urn of Cruceni- Belegiș type, phase II (3); Belegiș-Stojica gumno, grave no.78 (4) and no.58 (5); Moșorin-Stubarlija Surduk/Dukatar, grave no.17 (6).



1

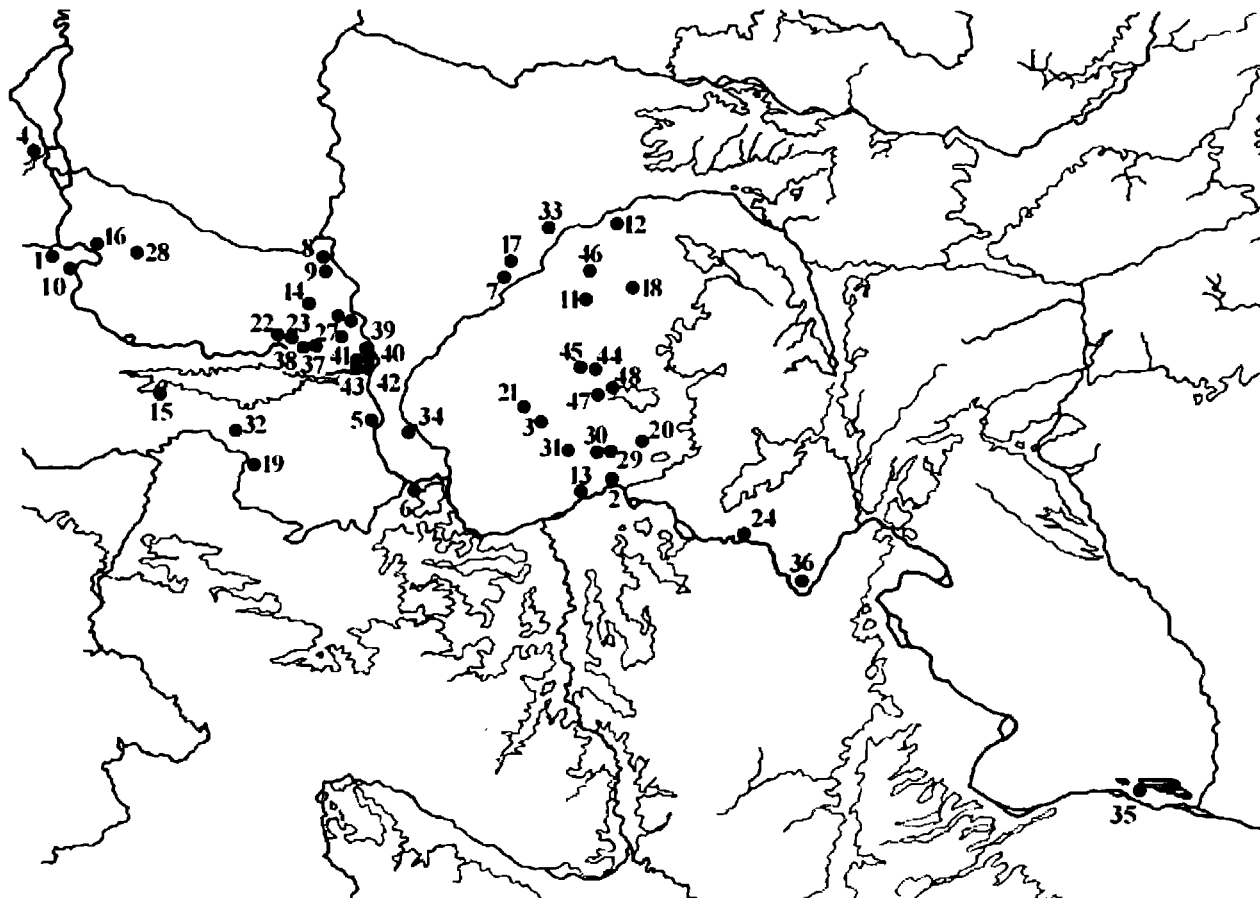


2



3

Pl. IX : Vatin-Bele Vode, cremation grave discovered in 1893 (1-3).



Pl. X: Map of the archaeological sites with discoveries assigned to the Cruceni-Belegiš and Žuto Brdo-Gârla Mare cultures and to the Szeremle-Bijelo Brdo cultural group

NEW ACCIDENTAL FINDS OF ROMAN COINS AROUND THE VILLAGE OF BERZOVIA (CARAŞ-SEVERIN COUNTY)

Raoul-M. Şeptilici, Angel Truican

Keywords: *South-western Romania, Berzovia, Roman coins*

In 2006, around the village of Berzovia, located upon the ancient site of the Roman fortress of the *IV Flavia Felix* legion, eight roman coins have fortuitously been discovered.

Marcus Antonius:

1. Obv. ANT·AVG / (III·VIR·R·P·C·), galley l.¹.
Rev. LEG (....), *aquila* between two standards, flying l, o.p.c.
Denarius, axis 12, heavily used, very good preservation, 3,27 g, 16-17 mm, RRC, p. 540-541, no. 544/13-39² (32-31 BC.).

Domitianus:

2. Obv. IMP CAES DOMIT AVG GERM P M TR P XI, laureate effigy l, o.p.c.
Rev. IMP XXI COS XVI CENS PPP³, Minerva advancing l, brandishing a javelin and holding a shield in l, o.p.c.
Denarius, axis 1, little used, very well preserved, 3,15 g, 18,3-19,5 mm, RIC II, p. 173, no. 166 (AD 92).

Traianus:

3. Obv. (IMP CAE)S NER TRAIANO OP(TIM)O (AVG GER DAC P M TR P COS VI P P), radial effigy l.
Rev. (SEN)ATVS P(OPVLVSQVE ROMANVS), in ex. FORT RED / S C, Fortuna seated r., holding rudder and cornucopia.
Dupondius, axis 6, little used, poorly preserved, 11,65 g, 25,55-26,55 mm, RIC II, p. 290, no. 653 (AD 114-117).

Hadrianus:

4. Obv. (I)MP (CAES DIVI) TRA PARTH F DIVI NER NEP TRAIANO HADRIANO AVG, draped and laureate bust l.

Rev. PONT MAX TR POT COS, în ex. FORT RED / S·C·, Fortuna seated r., holding rudder and cornucopia⁴.

Sestertius, axis 6, little used, well preserved, 26,1 g, 32,25-33,05 mm, RIC II, p. 406, no. 541a (AD 117).

Unidentified:

5. Obv. Legend illegible, effigy l.

Rev. Legend illegible, seated character? r?⁵

Dupondius⁶, axis 6?, heavily used, poorly preserved, 11,44 g, 27,5-29,05 mm.

6. Obv. (...)S(...)V(...), effigy l.

Rev. Illegible.

Aes, heavily used, poorly preserved, 3,9 g⁷, 24,2-27,7 mm.

7. Obv. Legend illegible, effigy l.

Rev. Illegible.

Copper coin, probably heavily used, poorly preserved, 3,57 g, 21,1-23 mm.

8. Obv. Illegible.

Rev. Illegible.

Copper coin, heavily used, poorly preserved, 3,76 g, 20-21 mm.

Except for coin no. 3, the others were all found in a private garden, more precisely behind the *principia*, near the earthen *vallum* or even upon it⁸.

The coin no. 4 is the first coin minted under the authority of Hadrianus to be found in this fortress and also the latest one⁹.

The earliest coin is the denarius issued by Marcus Antonius, which had been found close to the sestertius minted under Hadrian's reign. One should not consider its presence surprising; as such denarii had circulated until the end of the 2nd century AD.

Coin no. 3 was found some 4 kilometers east of the fortress, in an area known as *Colibi* (*Huts*), close to the *Coliba lui moș Aimun* (*Old Aimun's Hut*).

Nearby this location, a denarius issued by Tiberius had been found in July 2005¹⁰. Both these coins have been unearthed during the building of a dike along the Bârzava River.

Coins nos. 5–8 are much too used and poorly preserved as to be identified. While coins nos. 5–6 could at least be denominated, the other two are completely unidentifiable. They could be subdivisions of the aes or colonial coins, but also late issues from the 3rd century AD, in which case they would represent the first find of the kind within the perimeter of the fortress

The coins presented above enrich the list of numismatic finds from the area of Berzovia¹¹.

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Berzovia

NOTES

1. We used the terms of „right” and „left” as in heraldry, not those of the onlooker.
2. Given the illegibility of the legend, one can not mention the variant.
3. Because of the filling of the E letter in the stamping die, the word CENS appears as CFNS.
4. The figurate representation on the rev. of this coin is identical to that on the Traianus coin (no. 3).
5. The representations are vague on both sides. The effigy seems to belong to bearded emperor, possibly Hadrianus.
6. The coin had been denominated according to the size and alloy.
7. The weight is greatly reduced because of the heavy usage and poor preservation of the coin.
8. These coins have probably been found around *porta decumana*.
9. In May 2006, on the occasion of the annual meeting of the Banat archaeologists in Sânnicolau Mare, when presenting together with my colleague Alexandru Flutur the 2005 archaeological excavations from Berzovia and referring to the abandon of the fortress by the *IV Flavia Felix* legion, we stated that “no coin from Hadrianus had been found so far”. Such a coin had finally been discovered. The fact that it had been issued at the beginning of Hadrian’s reign (AD 117) supports the hypothesis of the abandonment of the fortress sometimes in his early years of reigning.

10. See Raoul-M. ȘEPTILICI, Angel TRUICAN, *Câteva monete romane imperiale descoperite întâmplător pe raza localității Berzovia, jud. Caraș-Severin*, (*Accidental Discovery of Roman Imperial Coins around the Village of Berzovia, Caras/Severin County*), in *Analele Banatului*, s.n., Arheologie-Istorie, XII-XIII, 2004-2005, Timișoara, 2005, p. 231-236, piesa nr.1.
11. This paper had been presented by its author under the title *Descoperiri fortuite de monete romane la Berzovia (jud. Caraș-Severin)*, / Fortuitous finds of Roman Coins at Berzovia, on the 21th Numismatical Symposium of the Numismatic Association of the Timiș Banat, Timișoara, October 15th 2006

ABBREVIATIONS

ex. – exergue

l. – (towards) left

Obv. – obverse

o.p.c. – outer pearled circle

r. – (towards) right.

Rev – reverse

RIC II – Harold MATTINGLY, Edward A. SYDENHAM, *The Roman Imperial Coinage*, vol. II, London, 1926.

RRC – M. H. Crawford – *Roman Republican Coinage* – vol. I-II – Cambridge, 1989.



1



2



3



4



Roman coins found in Berzovia (2006)

NEUE INSCRIFTEN AUS DEM RÖMISCHEN KASTELL VON TIBISCUM

Călin Timoc

Schlagwörter: *römische Dakien, Palmyrener, Weihinschriften.*

Die archäologischen Ausgrabungen von Tibiscum, an dem Gebäude IV aus dem grossen römischen Kastell (Phase IV) wurden im 1964 von M. Moga begonnen, doch niemals vollständig und befriedigend veröffentlicht¹. Wegen dem Informationsmangel bezüglich der heutigen Ruinen des Gebäudes IV, die teilweise an der Oberfläche stehen, die archäologische Forschungen wurden beginnend mit dem Jahr 1999 neu gestartet¹.

Die systematischen Ausgrabungen dieses Objekts haben im Jahr 2004 zwei epigraphische Funde freigelegt.

1. *Weihinschrift*, Kalkstein; 87 cm hoch, Schaft 55 cm breit, 34 cm dick; Buchstabenhöhe 4 cm; Reihenabstand 1, 7 cm. Gefunden *in situ* in der Heizanlage im nördlichen Raum des Gebäudes IV, jetzt im Lapidarium des „Constantin Daicoviciu“ Historischen und Archäologischen Zentrums der West-Universität Temeswar; gut erhalten.

Der Stein weist unwesentliche Beschädigungen auf. An der Schriftfläche (42 x 33 cm) sind noch die Spuren des glättenden Instrumentes zu erkennen, trotzdem ist die Schrift klar, korrekt und sogar elegant. Der obere Teil des Denkmals hat eine Front mit verzierten Dreieckgiebel und einen Rundgiebel im Zentrum, vielleicht ein Sonnensymbole.

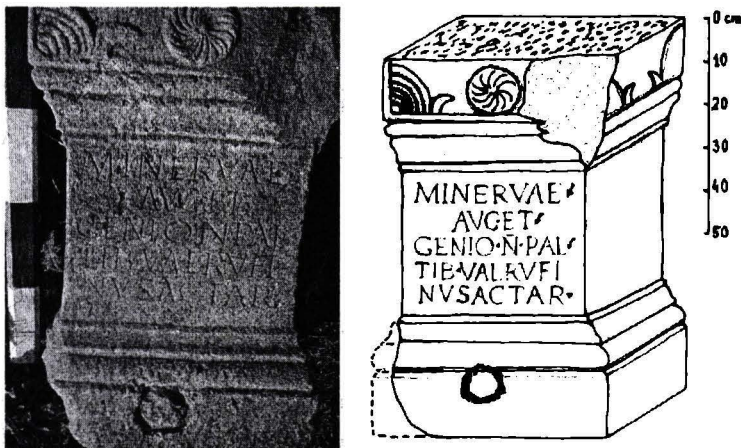
Mineruae

Aug(ustae) et

Genio N(umeri) Pal(myrenorum)

Tib(iscensium) Val(erius) Rufi (-)

5. nus actar(ius)

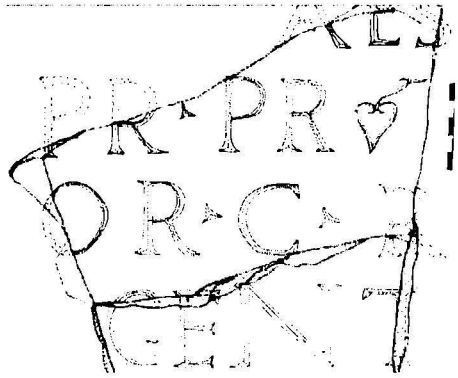


Der Text informiert darüber, dass der römische *Origo Actarius* der *Numerus Palmyrenorum Tibiscensium*, der wahrscheinlich im nördlichen Raum des Gebäudes IV, des grossen Römerlagers von Tibiscum seinen Dienst ausübte dort seiner nächsten Gottheiten eine Widmung errichten liess². Die meisten Widmungen zur Minerva sind in römischen Dakien von Aktarien gestellt³. Der Soldat von Tibiscum, scheint in Apulum eine jüngere Schwester gehabt zu haben, *Valeria Rufina*, die dort mit *Longinus*, einem *Beneficiarius Consularis* verheiratet war. Ihre Existenz ist uns aus dem Text eines Grabsteins bekannt, wo die junge, 20 Jahre alte Frau, mit ihrem kleinen, 4-jährigen Kind *Longinianus* nach ihrem Tode von *Longinus* (Mann und Vater) begraben wurden⁴.

Datierung (nach dem archäologischen Kontext): gegen Mitte des 3. Jh. n.Chr. und das betrifft auch die Inschrift von Apulum (IDR III/5, 594).

2. *Bauinschrift* (?), zwei Bruchstücke, grauer Marmorstein, 24 cm lang, 25 cm breit und 3 cm dick. Wiederentdeckt in sekundärer Position an der Oberfläche, in den alten Ausgrabungen von M. Moga am Gebäude IV, neben der östlichen Mauer. Buchstabenhöhe 4 – 4,5 cm; Reihenabstand 2 cm.

[.....]
 [...C]aes(ari?)[.....]
 [... P]r(o) Pr(aetore) ♠ [...]
 [...Palmyren]or(um?) * C(ura?) * R[.....]
 [...ex ar]gent[i pondo?.....]
 [.....] ?[.....]



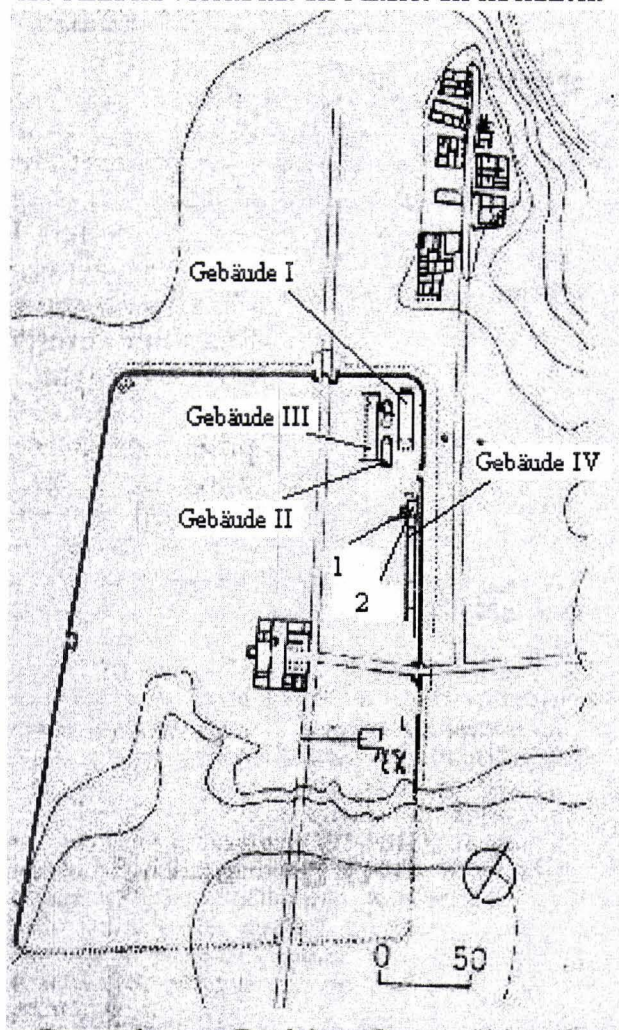
Die Leserlichkeit dieser fragmentarisch erhaltenen Inschrift erlaubt keine leichte Rekonstruktion. Doch der Text ähnelt einer anderen, von M. Moga gefundenen, „Tafelinschrift“, in der auch über ein gewisses Silbermass als Schenkung, vermutlich für die Herstellung einer Statue die Rede ist⁵. In der 3. Zeile kann man auch [...Vindelic]or(um)*C(ivium?)*R(omanorum?)[...] lesen, doch weil der epigraphische Fund aus dem Gebiet des kleinen römischen Kastells von Tibiscum stammt, wo der Sitz der Palmyrener (im grossen Lager) war⁶.

Datierung: 3. Jh. n.Chr.

Die beiden Inschriften werfen wieder das Problem auf, dass im der römischen Kastell von Tibiscum in den nord-östlichen Teil mehrere Verwaltungsgebäude, alle mit *Hypocaustum* Heizungssystemen, mit dekorativem Portikus um einen kleinen *Forum castrens* errichtet wurden.

Einige davon scheinen auch als Kultstätten funktioniert zu haben, wie z.B. das Gebäude I7. Warum diese innere Architektur des grossen Römerlagers von Tibiscum am Anfang des 3. Jh. n.Chr. so geplant wurde, ist noch nicht klar, aber man kann vermuten, dass die Palmyrener in ihrem Areal nach eigenen, helenistisch - orientalischen Traditionen das Festungsviertel organisiert haben und diese wichtigen Denkmalbauten (I, II und das nördliche Ende des Gebäudes IV), die Rolle einer zweiten *Principia* hatten.

Plan der Römerkastell von Tibiscum publiziert von
Gh. Curinschi Vorona mit der Fundort der Inschriften



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1. M. Moga, *Tibiscum. Raport preliminar asupra cercetărilor din anul 1964*, in Sesiunea de Comunicări Științifice a Muzeelor de Istorie (decembrie 1964), Bd. I, București, 1974, S. 383 – 395; Doina Benea, *Note de lectură*, in SIB, XIX-XX (1995-1996), Timișoara, 1999, S. 257.
2. Doina Benea, C. Timoc, Mariana Crînguș, Simona Regep, *Iaz, com. Obreja, jud. Caraș-Severin*, in *Cron.Cerc.Arh.d.Rom.* (campania 1999), Cimec - Deva, 2000, S. 47.
3. Es ist nicht die erste Inschrift dieser Art von Tibiscum, ein anderen *Actarius; Aurelius Candidianus* des *cohors I Vindelicorum* ist uns von einem Weihaltar bekannt, der in der Heizanlage der *Armamentaria* aus der *Principia* gefunden wurde, siehe Doina Benea, *Epigraphica (I)*, in *Civilizația romană în Dacia*, Cluj, 1997, S. 111.
4. IDR III/3, 111, 112.
5. IDR III/5, 594.
6. Piso, Doina Benea, *Epigraphica Tibiscensia*, in *ActaMN*, 36/I, 1999, S. 102.
7. In diesen Teil des Lagers sind mehrere Inschriften der Palmyrener entdeckt wurden: IDR III/1, 134, 136, 142, 143, 144, 149.
8. Piso, Doina Benea, *a.a.O.*, S. 105.

THE EARTH WORKS FROM CORNEȘTI – “IARCURI” (ORȚIȘOARA VILLAGE, TIMIȘ COUNTY) IN THE LIGHT OF RECENT FIELD RESEARCH

Dorel Micle, Liviu Măruia, Leonard Dorogostaisky

Keywords: Remote Sensing, Bronze Age, Cornești, Banat, Romania, fortifications, GPS

The Cornești “*Iarcuri*”¹ (the old name of the village is Jadani) have fascinated and continue to fascinate both the experienced researchers and the less experienced history lovers through their impressive size and good conservation state. The fact that these enormous fortifications have not been investigated yet by archaeologists (except for the superficial excavation made by M. Moga in 1939) causes their utility and dating to remain uncertain. The new Google Earth software has given an unsuspected advantage to the archeological survey research in Banat region, through the accuracy of the satellite images it provides in the 15 m clarity band, on the corridor between Arad and Timisoara. With the help of these images and as a result of numerous field researches our team (made up of Dorel Micle, Liviu Măruia, Mircea Ardelean, Adrian Cîntar, from the West University of Timișoara, and Leonard Dorogostaisky, Alcatel România) had the chance to discover a significant number of settlements dating from prehistoric ages up to the dawn of the Modern Age. Many of the discoveries are new and the results of these investigations from Banat will be published punctually by our team.

It is in this context and under the enthusiastic impulse of engineer Leonard Dorogostaisky, passionate field researcher and specialist in both computer software and on the spot realities that we started a series of surveys in the *Iarcuri* area, which resulted in a great number of findings. 9 surveys have been done between February and July 2006, by a team made up of Adrian Bejan, Dorel Micle, Liviu Măruia, Leonard Dorogostaisky and numerous students of the History Department of the West University of Timișoara. The research methodology has aimed at two aspects:

1. to examine on the field the line of the earth walls, to notice their constructive characteristics, to gather data on the logic of concentric structures, on the strategic relations among them, on their positioning in relation with the field morphology. The GPS coordinates of the line of the walls have also been gathered together with a significant number of photographs in three different seasons.

2. to research exhaustively on the field the enclosures I and II and partially the enclosures III and IV, with the purpose of gathering and indexing the traces of inhabitation, placing them on a map and elaborating a statistics of the density of the inhabitation in order to establish to which chronological and cultural background the construction of these fortifications belongs to.

The purpose of our investigations in this absolutely general context is to bring once again to the attention of the specialists an extremely interesting archaeological monument. The systematic research of such a monument requires an enormous effort from a team of specialists, who would be confronted with perhaps the largest earth fortification in Europe.

The surveys have investigated a large area and have had the function to draw a clear picture of what can be noticed today on the surface of the *Iarcuri*. Due to pragmatic reasons (the size of the area that had to be covered) the archaeological research on the spot was focused particularly on the enclosures I and II. In planning the course of the surveys, we have taken into consideration the satellite images of the site provided by Google Earth website. In the case of the *Iarc*, the images have shown details that suggest new proofs of the existence of the IVth wall. One of the surveys had as an object photographing the wall.

From the satellite images, considering the darker color, close to black of a great part of the enclosure II, but also taking into account the fact that it is located mostly on a plateau South of the Lake Valley, we have drawn the conclusion, even prior to the survey, that this was the most inhabited area of the *Iarc*. The darker color is due to higher concentration of organic matter produced by long-term inhabitation. There is also the possibility that this color is generated by a humidity excess. The researches have confirmed that on this surface there are important proofs of material culture (significant quantities of ceramics, flint fragments, grit stone or volcanic tuff grinding mills, etc.). Based on the analysis of the color spots visible on the satellite images, we could discover a great number of settlements in many areas in Banat, which have been visited on other occasions.

If the South of enclosure II has totally confirmed the calculations, this was not valid for enclosure I. In the centre of the enclosure I there were traces of modern inhabitation, from the time in which this was the spot on which the small village of "Alte Tanya" was placed, and two more classifications of archaeological prehistoric material.

Another objective of the surveys was establishing the number of initial gate enclosure I and II had. The team also hoped that in their immediate vicinity they could identify a great number of artifacts. This is the reason why there were two surveys in the enclosure I. Traces of inhabitation have been identified on both slopes – N and S – of wall I, where this is closer to the Carani Valley.

Taking into consideration the enormous surface of the *Iarc*, most of it is fortunately unoccupied by modern settlements, the great number of archaeological sites, big or small, new or rediscovered, is justified. They cover ages starting with the Neolithic Age, quoted by F. Medeleț (*Medeleț Fl.*, 1993, 119-150), and go up to the IIIrd and IVth centuries or even pre-feudal or early feudal times.

On the other hand, we have tried to understand the shape of enclosure II, and water management within the community, and we have tried to identify the water courses. On the field and on the satellite images one can notice that the minor course of the valley narrows considerably downstream, after crossing the Carani Valley in the West. The difference between the course of the water upstream and downstream has been measured: $20 - 8 = 12$ m.

It is nearly certain that there was a dam in the North, where the II-nd wall crosses the Carani Valley. In front of the crossing point the valley has a marshy feature, while downstream it is narrow and with no humidity excess. There was no other explication for the fact that the II-nd wall is parallel to the Carani Valley, at an approximate altitude of only 5 – 6 m and at a medium distance of only 80 m from it. To the North, the III-rd wall is close to the watershed, at a relative altitude that is 10 m higher, and at distance of approximately 350 m from the river. The only plausible function that can be supposed in this context, which is topographical atypical, is that it is meant to protect a water supply.

From a geographical point of view, the *Iarc* is situated in the Vinga Plain (*Munteanu I., Munteanu R.*, 1998, 12-13; *Posea Gr.*, 1997, 291-296, 360-372; *Bizerea M.*, 1973, 232-243), at an absolute altitude with values between 111 m, in its lowest point at the crossing of the Lake Valley, in the North of the Cornești village, towards the IV-th wall (45°54'52.72"N, 21°13'14.19"E) and 163 m in its furthest point to the East, with the coordinates 45°56'47.45"N; 21°16'20.18"E. The Vinga Plain is a tall one, with a decrease in altitude from East to West and from North to South, characteristic that can be found in the *Iarcu* area. The Northern limit of the *Iarc* is situated at 45°57'12.55"N, 21°13'37.22"E, altitude of 139 m and the Western limit is at 45°56'29.73"N, 21°11'58.15"E, altitude 136 m. The typical soil is the leached black earth. It is worth noticing the conclusions of the pedological study undertaken in 1977 by Ghe. Ianoș². Mr Ianoș mentions the antropycal intervention on the chemical composition of the soil in this area, considering the chemical changes that take place over a long period of time (thousands of years in this case), in contact with the atmosphere of certain chemical compounds from the clay layer.

From a hydrological point of view, two valleys with a permanent water course cross the *Iarc* on a direction oriented from ENE to WSW, at a distance of 1 km from one another. In the case of the first three enclosures the two water courses cross the areas on a distance of about 2 km. This is the Lake Valley that intersects

enclosure II at half distance N – S, and the Carani Valley that borders the enclosure I to the North.

Unlike the valleys from the North and the South of enclosure IV (the Post Valley and the Vineyard Valley), these have the following distinctive features: they are narrow (120 m Carani Valley, 250 m Lake Valley) and relatively abrupt on the contact with the surfaces that surround it (12 m difference in ground level in Carani Valley and 15 m in Lake Valley). It is worth noticing that the Vineyard Valley, although it has a hydrographic reservoir that is double the size of the one from the Lake Valley, it does not have a permanent water course. Another hydrographic feature is that on the surface of the enclosure II the Lake Valley has three affluent springs and the inter streams that are positioned to the North and to the South of the enclosure I have a width of 2.5 km and a much gentler slope to the North and respectively to the South.

The fortifications have been topographically measured only through satellite applications and GPS, a topographic elevation, with the entire station is not relevant at this time (due to the large size of the surfaces occupied by them). Except for the enclosures IV and partially the III, the fortifications have also been studied on the field through numerous surveys. The measurements were done on the satellite images with the help of the Google Earth Professional application, and on the field with the help of the GPS. The sizes resulted after the measurements are the following:

Enclosure I:

- 3140 m perimeter
- **72 ha** surface
- 72 000 m³ estimated volume of wall I

Enclosure II:

- 5980 m perimeter
- **213 ha** surface
- 144000 m³ estimated volume of wall II (24 m² medium section of the wall)

Enclosure III:

- 8120 m perimeter
- **504 ha** surface
- The volume of the wall cannot be calculated due to the fact that it has not been preserved intact on its entire line, thus any supposition can be considered to be premature

Enclosure IV:

- 15735 m perimeter
- aprox. **1722 ha** surface
- the volume cannot be estimated in this case either, wall IV is the worst preserved of all walls.

The following inhabitation complexes have been discovered as a result of the nine campaigns of on the field researches

Enclosure I.

It is situated on a plateau between the Carani and the Lake Valleys, at a medium absolute altitude of 145 m. The level difference from the thalweg of the valleys is 15 m in the North and 8 m in the South. The Northern part of the enclosure is almost flat on a surface of approximately 54 ha (900 x 600 m).

Although there are several openings in wall I, we have strong reasons to assume that the access in this enclosure was originally possible only through one gate in the SW area (GPS point 45°56'3.87"N, 21°13'58.70"E), which communicated with the main gate of enclosure II. There is a possibility that there was a small entrance in the South, in the proximity of the torrent, meant to facilitate the access to the water supplies in the area (GPS coordinate 45°56'1.57"N, 21°14'14.23"E). The other openings are made subsequently, in the Modern Age, when in this area we have the small village of "Alte Tanya". Even though the map does not indicate a road, there was one probably through the bushy precipice in the North, which was continued on the opposite slope of the valley with an opening in wall II towards the Orțișoara locality. Another hypothesis is that through this precipice there was an access to water in the case of a siege. Up to this day here is no spring inside this enclosure. There is a torrential valley only in its Southern side, but without permanent water.

Besides the modern inhabitation, situated approximately in the centre of the enclosure, only two more inhabited areas have been discovered so far. They are next to the wall, behind it. The first and most important one is in the Southern area and it is bordered by the torrent valley to the West and by the country road that goes up near the spring to the East. The ceramic material and the great quantities of ash stretch on a distance of 250 m, closely behind and along the wall, which has a height of about 1 m in this area. The traces of ash and ceramics line up along the wall at a distance of 10 – 15 m from one another, but on a width with high concentration of only 2 – 3 m. Based on this groupings of ceramic material and ash traces we assume the existence in the area of about 20 houses closely connected with the wall of enclosure I. the ceramic material is placed in the final stage of the Bronze Age.

The second inhabited area is situated in the same position towards the wall as the previous one, but this time in the Northern area of the enclosure I. Unfortunately, the time at which we surveyed the area (the end of July) did not allow us, because of the rich vegetation and the agricultural activities, to form a more precise idea of the size and proportions of the inhabitation. The ceramic fragments found in the stubble, even on the wall, are similar with the ones found in

the first inhabited area. As in the case of the fortification from Sântana (Arad County) (*Rusu M., Dörner E., Ordentlich I., 1996, 18*), we assume that a part of the wooden structure of the palisade could also serve as a structure of resistance for the construction of houses, probably designed for those in charge of defending the enclosure. This is how we can explain the building of inhabited complexes on the very line of the walls. This assumption is of course irrelevant in the absence of archaeological investigations that would clarify the connection between the wall and the inhabitation complexes. It becomes relevant only if the two elements are considered to be contemporary. This is why we believe that in the case of archaeological investigations, these two areas of the wall of enclosure I are most likely to clarify the chronology of the building of the fortification.

Enclosure II.

Enclosure II, besides its oblong shape (oriented approximately on the N – S alignment – maybe not by chance), has several extremely interesting features. It can be divided in two sectors: the one North of the Lake Valley that has, according to surveys and satellite images few traces of inhabitation, and the one South of the Lake Valley, where we found the highest proportion of inhabitation from the entire *Iarcuri* area.

The plateau South of the Lake Valley (Pistrui), includes two valleys with springs with permanent water. It can be geomorphologically divided into three unequal area. The surfaces of these three areas have the following size: 600 x 300 m - 18 ha (Western area), 600 x 250 m - 15 ha (Central area) and 200 x 100 - 2 ha (Eastern area). The medium altitude of the Southern plateau is about 2 m higher than the central enclosure.

As in the case of enclosure I, we believe that the greater part of the openings are modern. Besides the Western gate, with a double entrance in chicane mentioned previously, and having the shape of a isosceles triangle with the base of approximately 175 m oriented towards the West, and with the sides of approximately 100 m (GPS coordinate 45°56'3.31"N, 21°13'50.51"E), there is another gate with a double entrance in chicane, in the SE (GPS coordinate 45°55'38.29"N, 21°14'42.66"E). This second gate is smaller, but has the same shape as the first one (the base of 56 m and the sides of 46 m), but this time it is oriented on the line W – NW, and with the same characteristic funnel shape.

Three details are obvious on the satellite images:

1. a light spot, of regulate, rightangular shape, with dimendions of 35 x 25 m (875 m²), situated in the centre of the Western area, on a N – S alignment. Its Eastern side is perpendicular on the direction of the SE entrance.

2. the ruins of a construction placed right in the centre, near the valley spring, of 9 x 7 m.

3. a great number (aprox. 50) dark spots, of irregular shapes and with diameters between 20 and 30 m (300 – 600 m²).

(1) During the archaeological investigations in the field the team tried to focus on these points of interest. In the case of the light spot, even though it is not clearly noticeable on the field, we found a great number of ceramic fragments, fragments of grinding mill stones, the blade of a bronze knife, big flint nuclei, all dating from the Bronze Age. It is the area with the richest and most diverse material discovered from the three areas in the Southern side of the enclosure.

(2) The ruins near the spring are probably of a modern dwelling. In the SV area of the enclosure there are traces of two more modern constructions, situated in the immediate proximity of a large opening in the wall, near the country road that crosses the enclosure from West to East.

(3) In the area of the dark spots we found ceramic fragments similar to those from the light spot. However we cannot assume based only on a surface analysis that these spots stand for traces of houses, even though the case is highly possible. The somewhat rich ceramic material also belongs to the Bronze Age.

Also within the enclosure, in its Southern side there are two more areas that present smaller traces of habitation. The first is situated on the left slope of the Lake Valley in line with the Western area. The ceramic material, dating from the IIIrd and IVth centuries, suggest the presence of a small community. The second settlement is on the left slope of the small valley situated in the centre of the Southern area. The settlement has been highlighted by the different color, black, of the earth, from the mole hills on this slope, but it cannot be dated.

Enclosure III.

It can be divided into 4 areas:

1. North of Carani Valley – unexplored yet within our surveys
2. the surface between enclosure II to the East, the Carani and Lake Valleys. Two settlements have been identified here as a result of the surveys: a Neolithic one (GPS coordinates 45°56'10"N, 21°14'40"E) and a post-Roman one, from the IIIrd or IVth centuries (GPS coordinates 45°56'9"N, 21°15'1"E).
3. the surface between the Lake Valley to the South and enclosure II, where we found settlements from the IIIrd and IVth centuries (GPS coordinates 45°55'59.23"N, 21°14'41.90"E), from the IXth to the XIIth centuries (GPS coordinates 45°56'1.51"N, 21°14'59.72"E), and a possible gate (GPS coordinates 45°55'34.08"N, 21°14'59.81"E). The ruins of a few modern dwellings can be noticed in the area. It is worth noticing that no traces of habitation have been discovered in the Southern and Western area.

4. the surface between enclosure II to the West and the Carani and Lake Valleys, has not yet been archaeologically explored.

The relatively rich archaeological material resulted from the investigations will be, together with the rest of the material discovered during the surveys in the *Iarcuri* area, the object of a special study, now in work.

Enclosure IV.

Due to objective reasons, connected to the short time span at our disposal, insufficient for systematic investigations in a field of this size (over 1000 ha), the investigation of the enclosure IV was not possible, thus we lack any significant observations.

The system of fortification: the only certain clues concerning the system of fortifications of the *Iarcuri* from Cornești are based on topographic observations made in the field. Thus the lack of archaeological investigations deprives of substance the conclusions. After analyzing the constitutive elements of the walls and their enormous size, the team attempted to state certain considerations regarding the work efforts necessary for the building of such a construction.

Wall I. It was not archaeologically investigated by M. Moga in 1939. According to the plan published by F. Medeleț (*Medeleț Fl.*, 1993, 119-150), but also to the measurements done on the field, its actual height does not go beyond 2 m, being less than 1 m in the Northern area, at the limit of the Carani Valley and in the SE area near the Lake Valley. In the Northern and Southern areas, where wall I is parallel with wall II, it is 0.5 m lower than the latter. In these sectors the ditch in front of the wall has an aperture width of 8 m, and the wall has a base width of 20 m. In the SE area no traces of a ditch are visible, actually it was not even necessary there, considering the ground configuration.

Wall II. The ditch in front of the wall has an aperture width of 20 m and the wall a base width of 30 m in the plateau area. Its height is 2 – 2.5 m, except for the slopes and valleys where it is lower. In the Northern sector, the wall has a smaller base width, of approximately 12 m, and a height of 0.8 – 1 m. The size of the ditch cannot be estimated.

Wall III. It generally traces the watershed between the Carani and Post Valleys in the North and the Lake and Vineyard Valleys in the South. It is situated at a distance of 155 – 600 m from the wall II to the East and to the West. The current width of the ditch is 16 m, the base width of the wall is 16 m, and the height of the wall is 0.5 – 1 m. It is possible that the SE entrance is placed in connection with the entrance of the Wall II. It is also noticeable that wall III permanently follows the relatively maximum altitude and that it is smaller and worse preserved than the walls I and II.

Wall IV. Concerning the dimensions of wall IV, they are identical with the ones of wall III, except for the medium height of 0.5 m. Wall IV is at a distance of 275 to 1900 m from wall III. A significant detail is the fact that it also protects the spring of the Lake Valley

All in all, it is noticeable that the sizes of the wall I and II are double compared with those of walls III and IV. Considering the small dimensions that were preserved in the case of the last two, it is difficult to say how many entrances to the enclosures III and IV existed.

As a result of these topographic considerations certain question marks are raised, but in the actual stage of investigations these can only be substance of futile speculations.

The first surprising aspect of enclosure one is its very size: 72 ha!

The second thing that can be deduced from in the field observations is that at the time of its building, this fortification was not meant for permanent living. We can only imagine that it was a final refuge for an important community. For example, the historical centre of Timișoara, the old fortress had a diameter of 800 m. What population could it have sheltered, how would it have been protected by a wall with a palisade (the smallest that existed) with a perimeter of 3 km? Would the artificial lake from the North have constituted the water supply? (if the lake exists?). How did they build it and why?

The third observation is that the plateau on which enclosure I is placed, is as a relative altitude, approximately 8 m lower than the Southern and Northern plateaus. We are used with the image that the central point be situated at the highest altitude to allow a better supervision of the neighboring areas, thus to create an advantage over the attackers. In the case of the *Iarc*, we have an apparently reversed situation, being inside it is similar to being inside an enormous amphitheatre.

On the other side, except for the visibility, the central enclosure has a privileged position. As mentioned before, the Carani and Lake Valleys are in the vicinity of the *Iarc* and are narrow and relatively deep. We believe that along these valleys there was no need for a ditch, and the wall had a smaller size and a palisade (there are traces of intense burning of the wall).

Enclosure I is protected in its immediate proximity, by wall II on three directions, at a relatively small distance, a medium of 180 m. In its North side, if we take into consideration the presence of the lake, it seemed impugnable – with the succession of ditch, wall, water, abrupt slope and palisade – for the military technology of the time (we must mention that at this point we do not have sufficient arguments to clearly identify its period!). Actually the length North of the Lake Valley and South of the Carani Valley of wall II is bigger than the perimeter of wall I by 1 km. if in the case of the Lake Valley there would have

been a dam and a lake too, than access from the South would also have been difficult. Of course from the East and West the attackers would have been confronted in their attempt to conquer the place, with a succession of two ditches and two walls with palisades. Considering these arguments, we can state that enclosure I could have been a last stronghold for a numerous population, and it would have also had access to a water supply.

From behind wall III, built at a maximum height of the area, the defenders could have noticed from a distance the moves of possible attackers, and would have had a superior advantage. It is hard to assume that the 8 km in perimeter of the wall III could have been defended only by pedestrian forces. We assume that the population had riders that could intervene in the most vulnerable places.

If the first three walls described above are probably contemporary, two hypotheses could be expressed for wall IV:

- contemporary with the first three walls, and serving as an intervention area for the cavalry, as a protection area, prestige area, delimitation for the animals' food supplies, temporary shelter
- built subsequently by another population

After the systematic survey of enclosures I and II, the habitation density is not at all intense. We believe that a general estimate of those who left the traces of the settlements from the two enclosures could centre around 1500 – 2000 people. Considering the size of the fortification its construction is not justified for this number.

If we assume the existence, on a range of 20 – 25 km, of a population that belonged to the same military and political system, and which could have taken refuge inside the fortification, in need, we could explain its very large size. From the specialized bibliography on the area, and even on a range of 20 km in the Vinga Plain, we could not find evidence of a high population density nor of the existence of large settlements from the Neolithic – Bronze – HA 1 (only 14 traces of settlements and fortifications have been published). For this reason we have carefully analyzed the satellite images, and in several locations we noticed the possible presence of prehistoric settlements that resemble the settlement from enclosure II of the *Iarc* – large light spots, of rectangular shape, and large dark spots with approximately round shape. Besides several already known sites, we began to investigate in the field the areas of interest from the satellite images. As a result we found several sites with material dating from the Bronze Age:

1. **Seceani 1** (Timiș County): The first objective, where we did the survey was the one placed at approximately 4 km East of the Orțișoara village (GPS coordinates 45°58'27"N, 21°14'48"E), and 300 m North of DJ 693-3. The site is situated on a high terrace that borders the left slope of the Izvorul Vinelor Valley,

named Vineyard Valley in its inferior course. The surface of the complex is about 14 ha and it is placed at 4.5 km from the centre of the *Iarc*.

2. Seceani 2 (Timiș County): is at 380 m SE from DJ 693-3 and at 5 km WSW from the church in Seceani, at an altitude of 151 m, (GPS coordinates 45°57'50"N; 21°15'26"E). Topographically the site is situated on the Southern incline of the right slope of the Post Valley. Traces of settlements can be noticed on the Google Earth images and in the field (*Gudea N., Moșu I., 1983, 192-193*).

3. Vinga (Arad County): is at 875 m SSE from the Catholic church in Vinga, at an altitude of 122 m, on the promontory of the confluence between the Vinilor and the Ardelenilor Valleys, at 800 m E of E70 and 8 km NNW from the centre of the *Iarcu*. The surface is of 7 ha. On the field we have noticed traces of nine points that could stand for dwellings (*RMI, 1999, 133-134*) (GPS coordinates 46°0'9"N; 21°12'25"E).

4. Cornești 1 (Timiș County): is at 1.6 km S-SE of the church in Cornești, at 119 m altitude, on a high terrace of the left slope of the Lake Valley, in the Cornet point (*Medeleț Fl., 1993, 119-150*), at 4.25 km of the centre of the *Iarcu*. Its surface is of 1.6 ha (GPS coordinates 45°53'52"N; 21°13'2"E).

5. Cornești 2 (Timiș County): is at 1.6 km ESE from the church in Cornești, the altitude is of 132 m, on the left terrace of the Vineyard Valley, at 2.6 km S of the centre of the *Iarcu*, surface 1 ha (GPS coordinates 45°54'40"N; 21°14'42"E).

6. Mailat (Arad County): is at 1.1 km NW of the church in Mailat, at an altitude of 113 m, on the left terrace of the valley of the Apa Mare river. The settlement is 17 km NW from the centre of the *Iarc*, its surface is of 1 ha. The concentration of seven large size dwellings is visible (GPS coordinates 46° 2'48"N; 21° 5'37"E).

7. Cruceni (Arad County): is at 2.1 km SW of the church in Cruceni, at an altitude of 131 m, on the right terrace of the Cruceni Valley (*RMI, 1999, 62*), at 14.8 km NE from the centre of the *Iarc*, its surface is of 4 ha (GPS coordinates 46° 3'28"N; 21°18'40"E).

8. Pișchia (Timiș County): is at 5.6 km NNE from the church in Pișchia, at an altitude of 152 m, on the left terrace of the Măgheruș Valley, at 9.8 km from the centre of the *Iarc*, with a surface of 6 ha (GPS coordinates 45°57'3"N; 21°21'44"E).

8. Sănandrei 1 (Timiș County): is at 3.2 km W of the church in Sănandrei, on the right slope of the Surduc river, at 12.4 km from the centre of the *Iarc*, at an altitude of 87 m and with a surface of 3 ha (GPS coordinates 45°51'17"N; 21°7'33"E).

9. Sănandrei 2 (Timiș County): is at 4.7 km NE from the church in Sănandrei, on the left slope of a small affluent of the Lake Valley, 500 m NE of the end of the Sănandrei Lake and at 6.5 km of the centre of the *Iarc*, at an altitude of 115 m, and the surface of 1 ha (GPS coordinates 45°52'36"N; 21°13'11"E).

10. **Murani** (Timiș County): is at 2.1 km S of the church in Murani, at an altitude of 107 m, on the right terrace of the Măgheruș Valley, at 5.3 km from the centre of the *Iarc* and a surface of 4 ha (GPS coordinates 45°54'20"N; 21°17'41"E).

11. **Tisa Nouă 1** (Arad County): the settlement is 1 km SE of the church in Tisa Nouă, in the upper area of the course of the Cruceni Valley, on its left slope, at an altitude of 152 m, 19 km NE from the centre of the *Iarc* with a surface of 6 ha (GPS coordinates 46° 4'26"N; 21°22'50"E).

12. **Tisa Nouă 2** (Arad County): the fortification is at 2.2 km SSE from the church in Tisa Nouă, at an altitude of 158 m, located at the spring of a small affluent right of the Vrăbleac Valley, 18 km NE from the centre of the *Iarc*, with a surface of 1.5 ha (GPS coordinates 46° 3'43"N; 21°22'47"E)

13. **Hunedoara Timișană** (Arad County): is 500 m E of the church in Hunedoara Timișană, on the inter river between the springs of the Ardelenilor Valley in the South and the springs of the Apa Mare river, at an altitude of 155 m, 12.5 km NE from the centre of the *Iarc*, with a surface of 8 ha (GPS coordinates 46°1'49"N; 21°19'30"E).

As a result of the discoveries from the surveys, and based on the analyses of the already known settlements we can estimate a density of one settlement/ 30 km².

Considering the possibility that the distance between the dwellings in these settlements may have been smaller (*Kovacs T.*, 1977, 23-26) (2 m), this might explain the great dimensions of the spots (eg. Seceani 750 m²). We can estimate for a dwelling a medium surface of 30 m², and for a settlement a medium number of 20 dwellings. We also believe that we can estimate the population of such a settlement to 100 people.

Considering the previous estimations, in the investigated area, we can appreciate the existence in these 900 km² of a minimum 30 settlements, with a population, except the *Iarcuri*, of 3000 people (3.3 people/km²). If we extend the area to that included in a 25 km range (a day's walk), we will have a total of 8000 people.

The earth volume moved for the construction of the *Iarcuri*, is of about 300000 m³. We know that the average digging norm for a medium present day worker is 4 m³/day, the technology is not much different, but the food is probably richer in calories. By reducing this value to one half, we can estimate a norm of 2 m³/day for that epoch. The result is for digging 150000 days/individual. We can estimate the same amount of work for the raising of the wall. The result is 300000days/individual for the embankment. During a year we can estimate 150 days with suitable working conditions. The result is 2000 years/ individual. Considering the time span of the construction 5 years, we can deduce that the embankment required 400 workers, who represent 5% of the population.

For the cutting of the trees, the weaving of twigs, the transportation of the wood, probably on small distances (possibly done at the same time with a deforestation of the area), we estimate a need for 300 workers. For tools – making, fixing – food preparation, medicine, we estimate a need of 100 workers. Thus we have 800 workers (10% of the population) that would work for 5 years.

From the investigations that have been already made in the field and from what is known in the special literature on the plain area of the Romanian Banat, there are several large fortifications, but none of these match the size of the *Iarc* from Cornești.

Among the large fortifications with earth walls known in the proximity of the inferior course of the Mureș river, the most important one is the one North of it, from **Sântana-Arad** (*Rusu M., Dörner E., Ordentlich I., 1996, 15-44*). By its dimensions 1130 x 970 m, the perimeter is over 3 km, the surface of the enclosure is about 78 ha. The shape of the wall, its dimensions and its construction technique has a series of similarities with the fortification from Cornești. The base width of the wall is 30 – 40 m, the height is 2 – 5 m, and the large ditch has an aperture of 12 m and a depth of 3 m. Unfortunately, only probing diggings have been done in this case too. These diggings included two sections of the wall and two excavated surfaces, done in 1963 and published in 1996. As a consequence of the artifacts discovered during the diggings, and especially the metal ones: golden belt of Celtic origin, spear tips, fragments of bracelets, buttons and ceramic fragments, the fortification was dated to HA1. There are however notable differences between the two fortifications, referring, among others, to the ground they were built on, the presence – in the case of the *Iarcuri* – of valleys with permanent water courses and springs. Differences can be noticed also in the cases of the shape of the possible entrances of enclosure II, the shape, size and use of the enclosures.

As a result of the analysis of several aerophotograms, traces or large circular fortifications have been identified.

Semlac “Pusta lui Cucu” (Arad County) (*Rada M., Cochină N., Manea D., 1988, 111-119*), situated 6.5 km NW-N of the village and consists of three concentric fortification belts (possibly 4). The surface of the enclosures are 1.75 ha; 8.25 ha; 24 ha, respectively 100 ha. The walls have the base width of about 15 m and ditches with the aperture of 7-8 m.

Pecica “Duleul lui Bran” (Arad County) (*Rada M., Cochină N., Manea D., 1988, 111-119*), situated 9 km N of the city, consists of two closed rings of circular fortifications, perfectly concentric and a polygonal belt, circumscribed to the rings. The surfaces of the enclosures are 3 ha, 12.5 ha, respectively 50 ha. The walls have the base width of about 10 – 12 m and ditches with the aperture of 7-8 m.

Turnu “La Prioran” (Arad County) (*Rada M., Cochină N., Manea D., 1988, 111-119*), situated 3.75 km NW-N of the city, consists of three concentric

fortification belts (with inner ditch!). The walls have the base width of about 15 – 20 m and ditches with the aperture of 8 – 10 m. the surface of the enclosures are 1.75 ha, 12 ha, 55 ha.

Dumbrăvița (Timiș County) (*Rada M., Cochină N., Manea D., 1988, 111-119*), situated 900 m W from the SV corner of the locality. It has the shape of a circle with the diameter of 300 m, an inner surface of 7 ha. The walls have the base width of about 15 m and ditches with the aperture of 10 – 12 m.

From what we know so far, these sites have not been investigated through archaeological diggings that could provide more clues, especially concerning their dating. Furthermore, two additional fortifications that could be included in this typology could be the ones from **Munar** (Secusigiu village, Arad County) (*Luca S.A., 2005, 177*), situated 2 km S of the Mureș river. The fortification has a trapezoidal shape, with an enclosure of 14.7 ha, and with a wall and a defense ditch or the one from **Bodrogu Nou** (Felnac village, Arad County) (*Luca S.A., 2005, 44*), situated at 100 m S of the Mureș river. It has a surface of 0.6 ha, the wall is 3 m wide and 0.8 m tall.

As a result of the analysis of satellite images from Google earth, our team has discovered three more fortifications of this type, and in March 2006 we have made surveys on these sites which resulted in rich archaeological material:

Variașul Mare (Arad County), 3 km SE from the village, in the hydrographic reservoir of the Ier river, a right side affluent of the Mureș river with the GPS coordinates 46°15'14."N, 21°12'20"E, there is a complex fortification:

a) the smallest one, of circular shape, with a 280 m diameter and a 6 ha surface. The trace wall – ditch is of about 15 m. it is not visible in the field. Only the enclosure is about 1 m higher than the surrounding area. The ceramic material discovered is not very rich and it dates back to the Bronze Age.

b) a approximately rectangular fortification, with two earth walls and the dimensions 1000 x 650 m, having a surface of about 60 ha. The complex ditch – wall is 20 – 25m wide. Its walls cut in half the circular fortification. Both fortifications from Variașu Mare are placed on a higher ground than the floodable surroundings, even today that the area is drained. The paleotopographic studies will reveal the exact site of the marshes in the Western Plain, from before the systematic hydrographic improvements from the Habsburg period. In this context the fortifications will definitely appear as surrounded by marshy soil.

Vinga (Arad County), situated 1.5 km SE of the Catholic church from the city, on a central terrace of the right slope of the Vinilor Valley, with the GPS coordinates 45°59'50"N, 21°12'38"E. It has a round shape, with a diameter of 560 m, and a surface of the enclosure of 18 ha. From the satellite image we could notice a succession of ditch – wall – ditch – wall 45 m wide. The traces in the field are not very visible, the soil is intensely cultivated and the walls could not be identified

during surveys. It is however clear, both from satellite images, and from the investigations in the field that the prehistoric fortification is overlapped and partially disturbed by the early – feudal settlement. A rich ceramic material, dating from the Bronze Age and early – feudal age (XIth-XIIIth centuries) was discovered.

Firiteaz (Arad County), 2.30 km SW of the church from the village there is an earth fortification of quadrilateral shape with two entrance gates, in with a double entrance in chicane, in the point called *Țârvenca* (GPS coordinates 45°59'58.74"N, 21°21'42.46"E). The point of the hill on which the fortification is situated is surrounded from three parts by abrupt slopes, at 0.5 km NW by the Măgheruș Valley. The fortification of 450 x 380 m is made up of a wall and a defense ditch, very flat, with a width of 50 m and a height of 1m. the two gates in with a double entrance in chicane, are 30 m and are oriented towards the S, respectively E towards the Măgheruș Valley. In its immediate proximity, on the hill from the N side, in the point *Dealul Golumbului*, at 200 m, over the valley carved by a right side micro affluent of the Măgheruș Valley, there is an open settlement with a rich archaeological material dating from the Bronze Age.

Thus there are 10 more earth fortifications in the area that have similar features with the *Iarcuri* from Cornești – the large size, the type of fortification, the shape of fortification (round in most cases). Unfortunately thorough archaeological investigations are missing in 10 of these sites. The similarities lead us to the assumption that there is a possible connection among some of these fortifications, in the context of a coexistence or a “affiliation”

In conclusion we can appreciate that our findings, though incomplete, bring forth some realities in the field, whose thorough investigations will certainly provide a totally different perspective on the current state of knowledge. The mystery of the *Iarcuri*, the largest earth fortification in Romania, and may be even in Europe, cannot be solved in the absence of a research based on the interdisciplinary collaboration of a great number of specialists. The purpose of this study is to bring to the attention of those interested, what can actually be “seen” in this area. We do not claim that we have cleared the issues of the dating and function of the fortification from Cornești. We merely elaborated a statistic study of what can be noticed at the surface of the field, and as a result of in the field researches on a range of 25 km from this objective, we have noticed a significant grouping of sites dating back to the Bronze Age. We do not state that the *Iarcuri* belong to this time period, we only say it is statistic evidence. It is obvious to this point that only archaeological diggings will be able to clear this aspect.

ANNEX

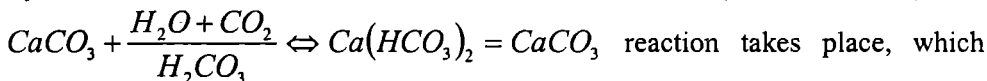
Pedologic study from the Vth area of Wall I

In 1977, the Office for Pedologic and Agrochemical Studies from Timișoara made several researches in the field in the *Iarcuri* area, to identify the soils and to try to improve them for agricultural purposes. From the two evaluation charts of the pedologic evidence only one of them was preserved, the one with the tests from the Western area of Wall I.

1. *The area features.*

The fortification from Cornești *Iarcuri* is located in the high piedmont plain of Vinga, formed on the carbonated fluvial deposits (transported by the Mureș River)

The soils are medium evolved, of the preluvosoil type, subtype soft, lymic. The content of calcium carbonate, in the undisturbed areas is between 1-10% and it is found at depths between 0.5-1.5 m. The content of calcium carbonate appears at the surface of the erosion areas, on the slopes on the erosion valleys that intersect the walls of the fortified enclosures. The presence of the calcium carbonate indicates the evolution stage of certain soils, and thus their age can be deduced: when the layer is newer $K_1=0-20$ cm depth, appearing to the surface. When the layer is older it has more contribution of rain water (meteoric water) and



leads to the formation of the lime precipitates in the shape of balls.

2. *The types of soil*

The dominant type is the weakly decarbonated preluvosoil $K=50-100$ cm, with a granulometrical consistence. The texture³ is medium smooth, that is clayish – argillaceous with a percentage of argil between 33-45%. The phosphor quantity from the extracted sample does not indicate human presence, because the surface soil was excavated from deep down and brought to its current position through massive human activities.

The earth from the wall was excavated from inside the first enclosure, fact proven by the same earth texture. The Humus from the wall was washed and the soil with a high content of iron oxide was left. The PH is uniform, typical of the uncarbonated clays that can normally be found deeper in the ground.

A chemical and textural rupture can be noticed 0.80 m deep:

- From a physical point of view, there is a sudden increase in argil quantity from 35% to 47%, and the sand decreases from 47% to 33%, which points to another material on top of which the anthropical one was placed.

- From a chemical point of view, the capacity of cationic exchange increases suddenly by 8% being greater at the depth 0.80 – 1.50 m.

3. Conclusions

The pedologic study certifies the fact the readings are anthropical, that they are made from the material from inside the enclosures, and that on the wall no habitation complexes were built – the proof is the uniform PH and the lack of phosphor from the soil. It is possible that the desertion of the fortification took place over a longer period of time (at least in the area from where the samples were taken) and that there was no arson.

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Fig. 1: Cornești Fortifications Area



Fig. 2: GPS Data Points

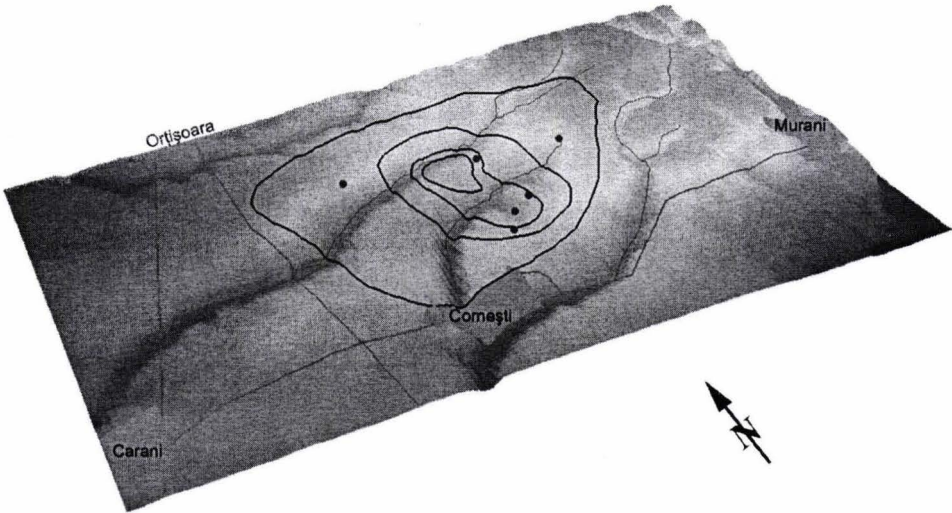


Fig. 3: GIS Reconstruction



Fig. 5: New Bronze Age Settlement discovery



Fig. 6: Bronze Age Fortifications

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